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ABSTRACT

Designed to serve as a resource for educational planners, administrators, and concerned individuals, this report reviews elements of Korea's long-term educational development plan. An introductory section presents basic positions about major educational issues that are related to planning for a long-term educational development. Part one traces Korean education from the past to the present with specific reference to its relevancy to changing milieu, and suggests the direction of educational development. Issues are addressed in section two which focus on humanization, equality in education, improvement of educational contents, methods and facilities, education in basic sciences and technology, skill education, vocational education and career guidance, development of high-level manpower and education in preparation for the future. Section three discusses the reform of the educational system, the professionalization of teaching and educational administration, research and development, and educational finance. Concluding statements are offered and present a profile of Korean education in the 2000's. (ML)

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Korean Educational Development Institute

KOREAN EDUCATION 2000

Prepared by Research Team

Dr. Yun Chung-il, Project Director
Dr. Kang Moo-sub
Mr. Chung Il-hwan
Mr. Kim Jae-woong

Korean Educational Development Institute

With Special Contribution of Planning Committee

Dr. Lee Yung-dug (Seoul National University)

Dr. Kim Shin-il (Seoul National University)

Dr. Kim Yoon-tai (Sogang University)

Dr. Park Rae-young (Hong Ik University)

Dr. Shin Se-ho (Korean Educational Development Institute)

Dr. Ahn Byung-joon (Yonsei University)

Mr. Lee Won-woo (The Blue House)

Dr. Lim Hy-sop (Korea University)

Dr. Chang Sang-ho (Seoul National University)

Dr. Chung Tae-bum (Korea National University of Education)

Translated by Mr. Hong Sah-myung (Korea Research Foundation)

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PREFACE

A series of hardships and social disturbances have hardly given Korean people a breathing spell to prepare for new challenges of the present century. Despite the dire reality, however, the unusually high degree of enthusiasm for education and the firm belief in education as the corner stone for national development were the powerful drive for educational development to what it is today. Looking back on the past, the expansion of educational opportunity contributed to enhancing the quality of people at large, thus laying the foundation for modernization. Behind the splendid facade of accomplishments, there have been problems which account for education falling short of dramatising human potentiality to achieve self-realization.

At this crucial hinge of history, we are shouldered with the historical mission of perpetuating educational development and patching educational deficiencies in preparation for new challenges of the 21st century. Considering what to be done in preparation for the 21st century, education, among others, figures prominent, for it produces people to play leadership role in the shaping of the future. Where and how to direct educational development form an important question to be addressed at present.

Against this background, a long-term educational development plan was promoted in the context of the Long-term National Development Plan. The plan reflects an attempt to define the new view of education, to envision what education should be like in the future and to present policy tasks to realize the education envisioned for the future.

Initiated in 1983 as part of planning for long-term national development, this study provided for discussions on matters pertaining to education among various walks of life and among scholars representing a wide range of disciplines. The result of discussion was released in the form of a report. The interim report was published at the end of 1984 and this provided the basis for supplementing and refining which led to the publication of the final report.

This report comprises introductory part, three parts which constitute the main component and concluding part. In the introductory part, basic positions about major educational issues are elucidated in relation to planning for a long-term educational development. Part I of the main component reviews Korean education in the past and at present, with specific reference to its relevancy to changing milieu, and suggests the direction of educational development. Part II and III are more specific about the development direction by assessing problems and needs and presenting policy tasks to be done. The former deals with humanization of education, equality in education, improvement of educational contents, methods and facilities, education in basic sciences and technology, skill education, vocational education and career guidance, development of high-level manpower and education in preparation for the future. The latter concerns educational systems, including the reform of educational system, professionalization of teaching and educational administration, research and development, and educational finance. The concluding part describes education envisioned in the year 2000, when assuming that the suggested policy tasks have been accomplished.

The publication of the final report provides me an occasion to thank the participants in this study. My special thanks are due to the planning committee members whose participation continued from the beginning and to the end of this study: Lee Yung-dug, Kim Shin-il, Kim Yoon-tai, Park Rae-young, Shin Se-ho, Ahn Byung-joon, Lee Won-woo, Lim Hy-sop, Chang Sang-ho, and Chung Tae-bum. Not to go unmentioned are the contributions of Drs. Yun Chung-il and Kang Moo-sub and assistant researchers, Messrs. Chung Il-hwan and Kim Jae-woong, who were responsible for coordination, documentation, editorial works and technical matters related to the publication of this report.

This report reflects a dream of education for the year 2000. It is hoped that this report will serve as a resource material for educational planners and administrators and the concerned people who are restless with preparing for new challenges looming over the horizon.

Kim Young-shik, Ph. D.
President
Korean Educational Development Institute

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INTRODUCTORY

PREMISES OF DESIGNING LONG-TERM EDUCATIONAL DEVELOPMENT

The designing of long-term educational development reflects the determination to put educational practices to a normal course. This designing is predicated on the following premises.

First, education envisioned of the future should not be the result of social change but be the agent of social change. As problems of human beings are increasing in complexity, it is imperative that education be concerned with the preservation and realization of humanity, thus providing vitality to the path of Korean people.

Second, education for the future should cease to be a mere means of national development; rather it should itself be a goal of national development. A lesson gleaned from Korea's experience with national development is that the concept of national development was narrowly defined so as to give urgency to material prosperity, with the resultant tendency to belittle humanity as secondary concern.

Third, education for the future should be in a mutually complementary relation with politics, economy, society and culture. Since educational problems are rooted in other aspects of life inherent in the society.

1. EDUCATIONAL DEVELOPMENT AS PART OF NATIONAL DEVELOPMENT

The basic premise of designing long-term educational development is that educational development itself is an index of national development. Considering that national development aims at ensuring a meaningful life of man, the mandate remains clear that it be achieved not only in terms of material growth but through the realization of spiritual value. To put it in another way, ensuring the largest possible number of individuals of the possibility of realizing a meaningful life as a man and doing justice to the process leading to this make it possible to achieve the national development in its true sense.

The essential goal of education is to assist in the self-realization of individuals. Unlike the material aspect of life, education defies to be controlled. Since education is the process of creating humane character, it has the mandate to resist forces threatening to stifle humanism. But in reality this plain principle is very often overlooked amid the prevailing tendency to give dominance to politics, economy and cultural indices in planning for national development. Education has been subjugated as a means to these goals. Education defined in such a narrow cannon should be cautioned, for it may act against the development of education and a balanced development of the nation as well.

There is no denying that education contributes to the developments of other spheres of life. More often than not, this notion leads policy makers to hold in a low regard amid growing concern for other strands of development. This is due to failure to recognize the essential goal of education to help each individual develop the innate potential to the fullest possible. It is on this notion that educational planning should be based.

The fact that education is a strand of national development gives two imperatives for it to accomplish; it is to play its unique role in the realization of human values, while it maintains a mutually complementary relation with other areas of concern. The conceptual model of this reasoning is illustrated in Diagram I-1.

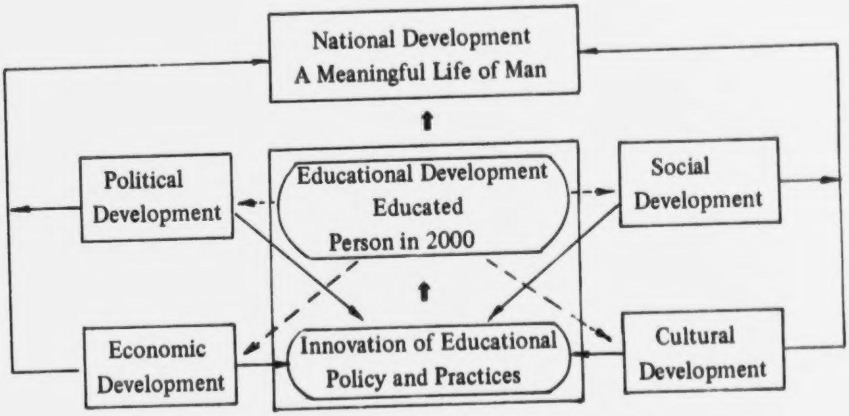
National Development
A Meaningful Life of Man
Political Development
Educational Development
Educated
Person in 2000
Social Development
Economic Development
Innovation of Educational
Policy and Practices
Cultural Development

Diagram I-1 Conceptual Model of Relation Between Educational Development and National Development

The goals of self-realization and character building hold education responsible for the assurance of quality life of human beings and the opportunities to realize it. Accomplishing this inherent goal of education is made possible by the continual innovation of educational policy and practice, the success of which is much dependent on the coordination of education with other strands of development. Planning for a long-term educational development presupposes a broad view of education in terms of its relation with other areas, which is in a sharp contrast with the conventional narrow view.

The popular concept of national development has been associated with economic growth. Equating modernization with economic growth directed little attention to other aspects of development, with the resultant subjugation of these as a means to material developments. This is a typical case with developing countries, inherent in the process of approaching a developed stage.

Although economic growth constitutes an important dimension of national development, it can not be regarded as referring to an overall development. Material affluence may well be taken for a condition of quality life but the way in which it is accepted assumes as much an important dimension and the latter is shaped by the prevailing value of the people. If this is to be consistent with the quality life of man in its true sense, it is more than desirable to nurture humane value, whereby the people consider humanity as the prime virtue.

2. POLITICS, ECONOMY, SOCIETY AND CULTURE AS STIMULANTS TO EDUCATIONAL DEVELOPMENT

Korean education is confronted with many problems which have driven the functions and operation of school to an irratic departure from normalcy. These problems are largely associated with external forces which are intertwined with other sectors of life. Therefore, solution to the problems may well be sought in the context of educational relation with other sectors. This section discusses non-educational factor—politics, economy, society and culture, which may remain hindrances to educational development in the preparation for the year 2000.

Political Dimension

Korea's liberation from colonial rule introduced democracy as a new political ideology, yet it has not reached the stage of maturity. The ruling class in Korea, busying themselves with struggle for power amid social disturbances following the liberation, was hardly able to take a breathing spell to ensure that the new ideology set its firm foothold in a newly formed nation. On many occasions, politicians sought the efficiency of bureaucratic administration and technocracy at the cost of democracy with the result that public opinions were not properly linked to politics.

Education in essence should remain separated from politics. This, however, does not mean that education is completely independent from politics. In actuality, this dichotomy may dismantle education of its practicality. But, since education deals with humanity in a long perspective, a short-sighted vision of politicians and their personal political interest or stakes may also incapacitate education in playing its inherent role with a high degree of autonomy and professional capacity.

This political counter-force accounts for the inconsistency and frequent change of educational policy, for it failed to provide a long-term political perspective. Local autonomy was introduced to educational administration, but in actuality, educational administration has not broken itself loose from centralization in almost all educational policies.

Confronted with many problems of staggering magnitude, in no way can we expect to solve them in a short span of time. Here, political maturity plays a crucial role of solving many educational problems and putting educational matters into a right perspective. Ensuring the maturity of democratic politics provides a necessary condition to guard against political neutrality of education and to facilitate an autonomous growth of education.

Economic Dimension

The economic gain made in the 1960's is marked by material quantum; there was an enormous expansion in economy of scale and standards of living rose markedly over the level registered at the time of the liberation. The economic growth is largely attributed to educational factors. The unusually high degree of enthusiasm for education provided a powerful drive for the quantitative development of education, making it possible to produce labor forces in the number that reduced labor cost. In a country unfavorably endowed with natural resources, cheap labour cost was a compensating factor.

Education which was the major mover of economic development did not receive the share of development result commensurate with its contribution. Investment in education did not grow in proportion to economic development. So to speak, no effort was made to cycle the flow of economic return to manpower development. Investment in public education accounts for 3.6 percent of GNP, not to be comparable to those of advanced countries. School education has seen a marked growth in quantitative terms but the failure of educational investment to keep pace with the quantitative growth caused educational conditions to remain unchanged.

Economic growth left a seamy side behind a splendid facade, which in turn imposed a negative impact on educational development. There was a growing tendency to set a great store by educational attainment marked by diploma and other symbols. Formality took precedence over substance! As industry was developing, teachers were no longer able to enjoy the high esteem accorded them in the past, as teaching was submerged by the rising water of new jobs. There were frequent turnovers of teachers as competent teachers shifted to more lucrative jobs.

Coming to school financing, resource input is far from the minimum requirement, let alone its failure to achieve the inherent goal of assuring the realization of human value. The old version of educational development largely reliant on enthusiasm for learning has now reached its limits in producing a new corps of skilled forces. Viewing education as having contributed to economic growth tends to limit the role of education to manpower development. What education actually does goes far beyond the purview of manpower development. Investment in education produces pervading and spill over effects on industry and the society at large. It is crucially important to do away with the dominance of economic factors and to recognize the visible and invisible hands of education in furthering on overall development.

Social Dimension

Korea's liberation from colonial rule provided an occasion for Western thoughts–scientific rationality, equalitarianism, meritocracy and individualism–to pervade all sectors of human life. But the onslaught of new thoughts did not drown out traditional values; it created a unique duality of consciousness governing social structure and human relations. In formality and appearance, the people are fairly modernized, but their ways of thinking and behaviors show pre-modern patterns. Education is not free from the duality of consciousness.

As a society moved from the closed to the open type, access to education becomes reasonably easy; the opportunity for education comes to people desirous of education. In the open society, meritocracy prevails and the school is expected to nurture this new virtue. By contrast, school education in the past played an important role in perpetuating the ascribed status and the popular view of education held by Koreans reflects this role. The so-called enthusiasm for education took the form of a fever which drove education to a solecistic path away from normalcy. Parents were not so much concerned with the maturity of character as the symbolic value of education associated with advance to the next higher school and graduation. The prevalence of this value led the school to turn its back on the true essence of education and busy itself with preparing youngsters for examination. The sticky problems we see today —such as "fever for first-rate school," "skirt-wind" brought by mothers (unnecessary intervention of mothers in school), pros and cons about the entrance examination, "diploma inflation," and the excessive outlay on private tutoring—all are rooted in the mistaken view of education.

As much responsible for the mistaken view of education is parents' pre-modern view of children. Traditionally, Korean people showed so high a degree of allegiance to family that its member was not considered as an independent entity but as an extension of parents. Parents' expectation of what their offsprings should be molded the latter's vision of the future. Meeting their expectations was regarded as the manifestation of filial piety for parents, although it called for the sacrificing of their interests and innate aptitudes. Parents expect education to help their offsprings realize their ambition on their behalf. This pre-modern view of education becomes a major hindrance to educational development.

The essential character of education lies in the necessity of dealing with individuals as an unique character and the goal of assisting each individual in self-realization. This new concept gives rise to the assertion that restoring education to normalcy calls for a dramatic change of traditional value and consciousness.

Cultural Dimension

Culture is a unique entity combining knowledge, beliefs, arts and customs which has evolved from living experiences over millenia. In this sense, culture is inseparably intertwined with education. Education transmits knowledge, wisdom and cultural heritage to the next generation. In this sense, the level of educational attainment in a nation is in proportion to its stage of cultural advancement.

Being a land bridge between the Asian mainland and Japan, Korea has been a meeting ground for different culture, from which evolved the unique culture of Korea. Since it sits astride so many different cultures, probably it might be beyond the reach of Korea to contain them in a harmonious relation and the problem of multiversity led to value conflicts and internal strifes.

The onslaught of Western culture caused value conflict as a segment of populace blindly adopted them, while the established generations still cling to old values. The crux of problems lies in the trend to equate the adoption of Western cultures with modernization. Reacting against this trend, movement was launched to restore cultural identity. Very often, this movement is carried too far to such an extent that encourages parochialism, retrospective attitude, uniformity and chauvinism. As such, shuttling between the two extreme ends is as much destructive of an established order as the blind adoring of alien cultures.

School education in the most desirable form is possible when cultural consistency is assured. Cultural consistency invites commonly shared values and symbols, legitimately justified criteria and the concensus of opinions regarding the quality of life. The substance of culture should be such that enhances the quality of life to the commonly shared level. It is when this level is attained that education can fulfil its primary mission of transmitting the common cultural heritage free of conflict, frustration and misgiving.

3. EDUCATION AS A MOTOR OF POLITICAL, ECONOMIC, SOCIAL AND CULTURAL DEVELOPMENT

So long as education produces professional cadres in politics, economy, society and culture, with the development of these sectors being sought for the sake of quality life of human beings, it is imperative that education be in a complementary relation with the development goals of these sectors. The change of institution and custom presupposes the change of human beings. However excellent a new system may be, it regresses into an inefficient system, unless the persons who lead it are equipped with new value. This lesson can be empirically validated by our experiences with the new systems introduced to facilitate national development since the liberation; much of our experiences were the repetition of trials and errors. It is important, therefore, to prepare education for the role of assuring harmony between new institutions and persons who operate them, thus dramatising its potential for national development.

Political Development

The most important political task confronting Korea is to make democracy viable in the indigenous setting and rally the people behind the greater cause of national unification. This task can be accomplished when youngsters are sensitized to the merits of democracy and the necessity of national unification. Sensitising them to these needs calls for the acquisition of necessary knowledge, the shaping of desirable attitude and the provision of motivation, in which education has much to do.

The institutionalization of democracy is inseparably related with the accomplishment of national unification. In a tension-laden situation where the South is pitted against the most diabolic, totalitarian regime in the North, democracy in the South gave a political edge over the North in that it offers an effective linkage between the government and the people. Whereas the totalitarian regime separates the two entities by a gulf not to be crossed. While totalitarian regime is characterized by resort to coercion and force, democracy seeks to unite people under the banner of rationality and harmony. In this sense, democracy is an effective means of achieving national unification based on the unity of people.

The permanence of a social institution is in a large measure dependent on the psychological status of its members. However commendable the democratic institution may be, it is stifled and tarnished, should the people lack political knowledge and understanding. This kind of understanding develops in the open, democratic society. Korea saw the belated advent of democracy, for it experienced a kaleidoscopic change of events in the span of a century, highlighting feudalistic monarchy system, 35 years of colonial rule, the liberation and autocratic type of government, all setting back Korea in its laborious ascending of development ladder. It was against the backdrop of political disturbances that dependency, blind allegiance, misgiving about self-governing, political apathy, the lack of responsibility, resistance to government control, etc. were nurtured to stifle the development of democratic citizenship.

The lack of mature political consciousness gives urgency to the development of qualities needed to make democracy bear fruition. This necessitates not only equipping politicians and bureaucrats with democratic qualities but cultivating democratic citizenship on the part of the people. When those assuming political leadership pay due respect to the public opinions vis-à-vis the people participating in political process, conscious of the merit of democracy, the political problems that we experience today will disappear. With the people righteously conscious of political participation, blind confrontation and indiscreet behaviors will give way to logical contention and persuasion with brake put on the misuse of political power.

Since national unification is based on the harmonious unity of people, it is important to create a climate where the people can find the common cause and symbols. Equally important is to develop the competency and attitude that enable people to accept and make the best use of a given situation. Education finds its role in motivating youngsters for national unification, cultivating democratic qualities and making people conscious of responsibility vis-à-vis the two political tasks of supreme concern.

Economic Development

The goal of economic development is to enhance the material standards of living of the people by effecting the quantitative expansion and qualitative change of economy. Achieving this goal, however, is impossible without the support of human factors. The material resources, however rich they are, become a dead loss, unless they are adequately combined with human resources that tap them in a way that serves human needs. The fact that Korea has made remarkable economic gains is not so much the result of rich material resources as the result of producing manpower of high calibre. The education in Korea was the prime mover of economic development.

Outside Korea, the economic climate is not supportive of economic development. Protectionism is rearing its head as a worldwide trend in trade, resources and technology. The problem is further compounded when we consider the reality of Korea at home. Korea is unfavorably endowed with natural resources and the territorial division is another scourge that not only inhibits an effective utilization of resources in the two parts of its territory but forces each part to set aside a significant segment of its scarce resources for national defense. It indeed is an uphill fighting to achieve a viable economy. Nonetheless, the development of human resource provided the sole means to survival in a country like Korea.

The abundance of labor which could be bought at relatively low cost was the major factor contributing to economic growth. But this is no longer a contributing factor when competition is dominating the international scene; what is needed is the working force of high quality. In responding to this call, education among others, finds the most vital role to play. The term "working force of high quality" does not refer to occupational trainings alone; it presupposes a broader view of all educational efforts directed to all members of society, encompassing knowledge, skill, working ethics, creativity, enterpreneurship, occupational view and value consciousness. Acquiring knowledge and skills constitutes one dimension of what education is all about. Equally important among its roles are the rationalization of economic life and the internalization of desirable values, both associated with economic development.

Social Development

Social development means that all social dimensions of the nation are set into the motion of change in a desirable direction. The society is a complicate web of individual entities, the type of which is determined by myriads of factors, notably by the pattern of social relations, position and role, and hierarchical structure of groups. When the change of all factors is directed toward enriching the life of human beings, we can call this a social change. This change presupposes the qualitative enhancement of belief, attitude and value among the members of society.

Since the liberation, Korea underwent a rapid social transformation which saw a massive influx of new institutions. But the mere change of institutions does not necessarily entail social change in its true sense, and it is particularly true when alien institutions are imposed on the people whose consciousness and value have not reached such maturity that ensures digestion.

Since social change is value-laden, education, among others, plays the most vital role in bringing forth social change. The importance of its role is further heightened by the prevailing value conflict resulting from the influx of different cultures. Education should serve its role as a means for the establishment and internalization of new consciousness and value compatible with new social structures.

Education also provides the most important avenue to social mobility and the recognition of this role is well manifested in people's strong yearning for education. Since education is a stepping stone leading to ascendancy in occupational position, economic status and social recognition, it is often mistaken for a means for personal success and affluence, and this mistaken view of education spawns many problems. People's belief in an open society invited a persistent drive to ensure opportunity for personal advancement based on meritocracy and it is in this context that education finds its role. Efforts should be made to ensure the rationalization of educational system and the equalization of educational opportunity. In connection with social development, it is also important for education to provide students with the experiences which are not available from the society, in order that they develop respect for humanity, disposition for human relation based on egalitarianism, the ability to discern personal from public matters and consciousness of community.

Cultural Development

The culture that Korea envisions of the 2000's is mass culture of subjective identity and of its own creation. Search for subjective identity and creativity by no means denotes adherence to retrospectiveness and exclusiveness. Rather these two qualities are such that can be achieved through the recreation of culture which inevitably is a harmonious combination of its own and alien cultures, viable in the indigenous setting of Korea.

Now that the globe has been shrinked into a community, it is crucially important to keep doors open to other cultures and to be ready for a wise accommodation of them. While maintaining its subjective identity and creativity, Korean culture should contribute to the diversified development of world culture. In this context, education finds its role in developing competency and quality that enable people to do their share in this goal. Relating education to the transmission and creation of culture, it cannot be said that Korean education has played this role to the fullest measure in the cultural context that has yielded to political pressures. Education envisioned of the year 2000 should stand above political and cultural particularities, if it is to play its role in the preservation and creation of culture. It is impossible to measure the value of arts, scholarship, science, thoughts and religion simply in terms of whether they should be rooted in tradition or of foreign origin. Their values lie in preserving subjective identity and creativity and in their contribution to enriching people's spirit. In view of the implications its geographical location holds, it is more than desirable for Korea to effect cultural development in a way that enhances its cultural diversity.

The rapid development of transportation and communication media provides new avenues to contact different cultures. It should be noticed, however, that the new avenues offer room for tokenism and faddism to thrive. The culture should be sought in the context of the mainstream that cuts across all facets of life and derives its legitimacy from consistent evolvement throughout historical changes. Losing sight of its mainstream, culture is distorted and tarnished. Culture may also have an entirely different meaning, depending on the character and attitude of a man who is exposed to it. For those devoid of openness, subjective identity, creativity and discreet judgement, culture may be transmitted, but it does not develop into a better one. Educational efforts should be directed to the development of quality and character that defy effective treatment in the haphazard process of socialization. It is in this way that education is ensured of its unique position distinct from other functions like socialization.

1

DEVELOPMENT DIRECTION OF KOREAN EDUCATION

I

REVIEW OF KOREAN EDUCATION

Despite political and social disturbances following the liberation, Korean education has made a steady progress, as evidenced by the successful institutionalization of new educational systems, the establishment of educational ideals, easier access to education and educational innovations which marked gigantic steps toward the provision of a better education.

Behind the splendid facade of accomplishments, however, there were a lot of problems. Value conflict resulting from blind acceptance of alien cultures, the inconsistency of educational policy and the lack of incentives were serious obstacles to Korea's laborious ascending of development ladder. Through its encounter with many problems, Korean people gleaned an inevitable lesson that the enlarged opportunities for education and higher level of educational attainment of people were the corner stone of national development.

Review of our past performances is expected to give a useful insight to charting a long-term development of Korean education for the 2000's. This chapter overviews educational developments that have been made over 40 years and advances some lessons from trials and errors that deserve attention along with accomplishments.

1. DEVELOPMENT OF KOREAN EDUCATION

Foundation for Democratic Education (1945-50)

Korea's liberation from Japanese rule in 1945 ushered in a new era which saw dramatic shift of political system from colonial to democratic type. It also provided an occasion for social transformation from a closed to an open system. The opportunity for education which had been limited to a small, priviledged fold of elites reached masses of people. Korean language became the medium of instruction, followed by an unceasing stream of efforts to develop a viable education in the Korean setting.

Among the major efforts made to lay the foundation for democratic education, seven policy measures stand out; they are (1) development of primary school textbooks, (2) institutionalization of retraining system for teachers to instill democratic ideal, (3) conversion of double-track to a single track school system of 6-3-3-4 pattern, (4) provision of adult education to eradicate illiteracy, (5) provision for local autonomy in educational administration, (6) enforcement of compulsory education, (7) planning for the expansion of secondary and higher education, and (8) the creation of colleges of education.

The new constitution enacted with the establishment of the Republic of Korea set the pace for the development of Korean education by ensuring equality in access to education and the right to receive free elementary education. The constitution served as the framework for Education Law to be promulgated in 1945. The Education Law sets forth educational ideal and goals, school system, kinds of school and administration system which reflect principles and criteria for all educational services. Deserving of special attention among these are the articles related to local autonomy in education and free, compulsory education.

The local autonomy in education is predicated on the democratic principle that educational decisions be based on the participation of local people and that educational administration be separated from general administration. The article pertaining to free education set the corner stone for the realization of equality in educational opportunity by stipulating the right to receive education.

Basic Education in the 1950's

Korean education suffered setbacks in its development amid political and social disturbances following its territorial division. But the repeated pounding of hammers steeled the will of people to develop education as the driving force for national development. The Wartime Emergency Education Act, which was promulgated in 1951, evidences their high sense of commitment to education.

Even at the height of the Korean War, the Ministry of Education reformed the secondary school system, implemented the national examination for entrance to middle school, established more national and public universities, promoted the reform of curricula and made it imperative to teach Chinese characters in primary school. It was worthy of attention that local autonomy was realized in educational administration at the war time.

After the Korean War was brought to cease fire, the persistant educational efforts of Koreans were confronted with difficult tasks associated with the necessity of creating a new educational order and realizing the supportive system. These new efforts were motivated by the yearning of people to create a new turn of educational development from the ravages of the war. They were not tied to the rehabilitation of educational facilities and preparations for teachers; going one step further, efforts were made to provide the fullest measure of basic education as stipulated in the Education Law. They took the forms of increasing the enrollment of free, compulsory education, giving vocational orientation to curricula, realizing local autonomy in educational administration, continuously reviewing the goals of education and improving educational content and method.

The plan to institutionalize a six-year elementary education was initiated in 1954 and completed in 1959. As a result, 96 percent of primary school-aged children were enrolled. The curricular reform gave heavier weight to anticommunism, moral and vocational education, as implicated by the reality of society. Vocational education in particular was given higher priority, which heightened policy concern for the retraining of vocational education teachers. The five-year Vocational Education Development Plan was formulated and implemented, beginning in 1958.

Quantitative Growth of Education in the 1960's

As U.N. designated the 1960's as "developmental decade", Korea made remarkable economic gains. The economic growth carried with it conspicuous changes in politics, social affairs, and culture. Along the rapid torrent of change, education in Korea has grown rapidly in quantitative terms.

The most salient characteristic of educational development in the 1960's is the quantitative expansion of educational system, which is manifested in an increased enrollment. As the six-year plan for the provision of compulsory education was implemented, all school-aged children were enrolled at the elementary level. The enrollment of secondary school showed a three-fold increase. As secondary education was popularized, enrollment in higher education increased most rapidly. The rapid growth of school population, however, gave rise to various problems associated with over-crowded classroom, over-sized school, chronical shortage of teachers and the shortage of physical facilities.

As the wave of increased population reached the next higher level of school, entrance examination became more competetive, gearing curriculum to preparation for examination. Later, this trend invited a series of educational efforts to reform the entrance examination system and normalize school education.

In connection with political and social disturbances during this period, educational efforts were persistently made to democratize school operation, decentralize educational administration, and enhance the quality of education. Coming into the 1960's, call was heightened for a review of educational ideals, and this led to the promulgation of the National Charter of Education in 1968, which set the direction for the development of education.

Cognizant of the role of teachers in upgrading the quality of education, teacher training system was reformed on a massive scale. The normal high school was upgraded to a two-year post secondary institute in 1962 and the same year saw the upgrading of the two-year teachers' college to a four-year institute to produce secondary school teachers. To upgrade the quality of teachers in service, Seoul National University established Educational Administrator's Training Center attached to College of Education in 1960. 1963 saw the inauguration of Graduate School of Education to heighten the professionality of teachers and educators. Besides, in-service training was diversified to meet different needs.

The rapid quantitative growth of education intensified competition for entrance to school on the next higher level and education degenerated into drill on strategical items in preparation for entrance examination. To normalize the education of primary school, the entrance examination to middle school was abolished in 1968. This action followed a comprehensive study on "Preliminary Examination for Entrance to College".

Educational Innovation in the 1970's

The 1970's is characterized by the rising wave of innovations in politics, economy, and social affairs. Like other spheres of life, innovative efforts were made in education to reform curricula and streamline educational systems. Research and development tasks which were unprecedented in scale were performed.

Foremost among the major innovations is effort to normalize elementary and secondary education which had been geared to preparation for entrance examination. The abolition of entrance examination to middle school was considered an important step toward the popularization of secondary school. But this measure simply transfered the problem of over-heated competition for entrance to high school. This pathological development eventually led to the reform of entrance examination system, which necessitated the effort to eliminate quality gap among high schools as its precondition. This is called "the equalization of high school." But the implementation of equalization policy was planned in stages. Problem stemed from the difficulty of dealing with quality gap between the area where this policy was in effect and other areas. As such, the duality of policy implementation spawned new problems which threatened to counter the positive effect of the equalization policy.

The new wave of innovation was also sweeping higher education. As the government-centered policy was shifted from control to encouragement, innovative efforts gained momentum to upgrade the quality of higher education. The Seoul National University, which had been split among different campuses, moved to a new campus and was given an opportunity to excelerate its development as an integrated whole. Experimental programs were designed and tried out to shepherd the innovation of higher education. The innovative elements of the experimental program were the downward adjustment of credit requirement for graduation, institutionalization of double major system and early graduation, and recruitment of students by a broad field. At the same time, a new policy was implemented to encourage colleges and universities to characterize their programs according to the unique needs of community. This policy was intended to sharpen the edge of higher education in the development of high-level techonolgical manpower. Policy concern for the vocational orientation of higher education led to the inauguration of junior colleges which offer two year post high school courses.

It is worthy of attention that the advent of "air and correspondence education" was coincident with the new development. In 1972, "Air and Correspondence College" came into being, followed by air and correspondence high school in 1974.

Research and development activities gained momentum as their usefulness proved in the formulation of complicated policies. It was at this time to recognize the acute need for a national institute which conducts studies on the goal, content, and method of education and develops new educational systems which provide solutions to educational problems, with an eventual view to contributing to national development in a long-term perspective. Against this backdrop, Korean Educational Development Institute was inaugurated in August 1972.

Efforts for Higher Quality of Education (1980–   )

While the innovative attempts made in the 1970's were directed at educational systems, those made in the 1980's reflect search for higher quality of education. Coincident with the establishment of the Fifth Republic of Korea, the new constitution includes a clause for the development of life-long education, which was adopted as one of the four policy targets. The effort to upgrade the quality of education was diversified.

The educational innovations were set in the direction of developing education for whole person, education for spiritual revitalization, science education and life-long education. The first two refer to an ideological concern for self-realization, the instilling of right character, spiritual posture against communism and community consciousness. The remaining two give education practical orientation to equip youngsters with ability to live in a rapidly changing frame of reference.

The major innovation policy to be mentioned is the comprehensive policy to normalize education and terminate private tutoring, promulgated in July 30, 1980. "Private tutoring" was sweeping educational scene as a supplement to school education, in preparation for entrance examination, causing anxiety about its possible growth out of proportion to the latter. It reaped a whirlwind of criticism for widening socio-economic gap in the earlier stage of growth. Restoring education to a normal operation directed by educational concern became the matter of supreme concern. The innovative policy reflects an attempt to address educational problems stemming from the mispractice of education in a comprehensive scheme.

The major innovations performed by this policy are as follows:

(1) The main college entrance examination will be abolished beginning in 1981. Instead, student achievement scores in high school and in national examination will serve as the major criterion for the determination of eligibility.

(2) The number of subject matters in middle school will be reduced, together with the downward adjustment of difficulty level of contents.

(3) Graduation quota for college will be institutionalized, which allows for the number of entrants in excess over graduation.

(4) All day instruction will be implemented to keep facilities operated to the fullest capacity.

(5) Places in higher education institutes will increase in number on an incremental basis with the target number of 105,000 to be reached by 1981.

(6) The airing hour of educational TV programs will increase with more subject matters covered. An exclusive network for educational programs will be established by 1981.

(7) The enrollment of Air and Correspondence College will be expanded and its duration will be extended.

Eliminating private tutoring was a complicated task requiring an increased financial support, expansion of facilities, better treatment of teachers, and change of values.

2. REVIEW OF KOREAN EDUCATION

Educational Accomplishments for Forty Years

The primary goal of education is to instill a right character and assist in self-realization which eventually leads to the realization of national aspirations. Under the suppressive rule of Japan, Korean education was far from achieving this goal. As Korea was liberated, education for masses of people was a matter of supreme concern, policy measures directed toward a steady expansion of educational opportunity served to lay the solid foundation for educational development which contributed to national development.

Contribution to Political Development

Political development and educational development are in a mutually complementary relation. Along educational accomplishments made over forty years is highlighted its contribution to the institutionalization of democracy. Educational contribution to political development may well be considered in three dimensions, namely; political socialization and participation, political leadership and the instilling of right national character.

Political socialization is the process through which the members of a political system acquire knowledge and foster attitude, which are required in fulfilling political roles. This concept of political socialization gives rise to more specific roles of education in heightening political consciousness of people and encouraging their participation in political process. Viewed from this dimension it can be safely stated that Korean education contributed to political development. In the first place, education produced political leaders and upgraded their political professionality. The term of political leaders used here denotes a wide range of people who are directly responsible for or indirectly associated with policy formulation, including professional politicians, civil servants, journalists and others who have influence on policy formulation. Going one step further, education helped the members develop the value consciousness and a lucid outlook on the nationhood, contributing to rallying the people behind the greater goal of national security and national unity.

Contribution to Economic Development

Educational contribution to economic development is considered in the context of human resource development and search for new knowledge and technology. Among various factors, the human resource of high quality was the fertile ground for economic development. The quantitative expansion of education was the pace-setter for economic growth, as industrial development called for a wide variety of skilled manpower in an increasing number. In qualitative terms, education upgraded the quality of working forces which led to higher productivity. The rise of the average years of schooling from five years in 1966 to eight years in 1980 is a valid indicator of productivity rise (see Table I-1).

Table I-1
Average Years of Schooling

Sex	1966	1970	1975	1980
Male	6.19	6.86	7.61	8.67
Female	3.97	4.72	5.70	6.63
Total	5.08	5.79	6.65	7.65

Education sets human potential on the direct road to scientific and technological innovation which in turn stimulates economic growth. At the earlier stage of development, there was a heavy reliance on imported technology. But grappling with development problems, educational system developed the capability of generating new technologies. Educational contribution to economic development is also highlighted in terms of its role in developing management skills that complemented technological development. Viewing educational system as an enterprise highlights another dimension of educational contribution to economic growth. The educational system on an expanding scale necessitates more buildings, equipment and materials. The creation of demand for these may well be considered as an important contribution to economic growth.

Contribution to Social Development

Social development refers to changes in value, labor and industrial structures, social stratification and other related areas. Educational contribution to social development may be considered in terms of industrialization (or urbanization), social stratification and value change.

Urbanization is an inevitable phenomenon attendant to industrialization. A closer look into its process, however, reveals education as another factor which precipitated this trend. By supplying employable skills, education caused the drift of educated people from rural to urban sector congested with industrial facilities. Excessive investment of rural people in the education of their offspring relatively weakened the economy of rural sector. Countering this trend were the educational policy to enlarge educational opportunities and effect a balanced development of all facets of education.

Korean education contributed to the shift of value from the old inertia inherited from the traditional society to development-orientation. Although rapid social transformation carried with it value conflict at the outset, this should not blind the fact that Korean education has done more to convert the old value to a driving force for modernization.

Education sets human potential on the direct road to scientific and viding vertical mobility through the hierarchical order of society. As education brought more people to the middle class, the structure of population changed toward the diamond shape typical of advanced countries. This restructuring of social classes is accounted for by the growing popularization of secondary and higher education.

Contribution to Cultural Development

Cultural development includes qualitative improvement, quantitative expansion and diversity. The inherent role of education is to preserve and transmit traditional culture and create a new culture which is inevitably a blend of old and new ones. Korean education contributed greatly to learning, arts and the cultural life of people through the expansion and the diversification of educational opportunities. Aimd the massive influx of foreign culture and the resultant value conflict, the people were able to filter them with discreet eyes and establish a cultural identity of their own creation.

Reflection of Korean Education for Forty Years

Korean education has made a steady progress over four decades, but this progress was not without problems. Much of the problems were associated with the mistaken view of education and unbalanced mix of different policy choices. Educational policy has been a matter of where to place a pendulum between goals and means, between quantity and quality, between equalization and excellence, between autonomy and control, and between tradition and innovation. An optimum mix of two extremes was supposed to provide solution to the problems.

Goals and Means

The view of education differs from person to person, but it falls within the range of choices between goals and means. The goals mean the eventual points of arrival, for which all educational efforts are directed toward, and these commonly include the instilling of right character and the fulfillment of self-realization. The means implies subjugating education as a means to personal success or national development. The view of education as a means has often been related with a deliberate effort for modernization and national development, which is typical of developing countries. This view relegates education to lower status in the priority hierarchy of national policy. In the case of Korea, the government budget for education ranks second, next to that for national defense in scale. But relating this budget scale to the minimum requirement for the fulfillment of the inherent goal of education, we find an enormous gap yet to be bridged. The popular trend to view education as a means to personal success blinds the people to the inherent goal of education, thus spawning problems — such as "rush to the frist-rate school," "overheated private tutoring" and vicious cycle of entrance examination. School education degenerated into drill on strategic items which were required to pass entrance examination and rote learning dominated the teaching of subject matters. The goal of school education was alleged to be the instilling of right character and the fulfillment of self-realization. What actually happened at school reflected primary concern with education as a means to other ends. Therefore, how to produce an appropriate mix of policy choices between the two extremes," constitutes a realm of inquiry in policy formulation.

Quantitative Expansion and Qualitative Improvement

The hallmark of educational development in Korea is the dramatic expansion of educational enrollment. Enrollment in elementary education reached 100 percent long since; secondary education has become accessible to 90 percent of the school-aged population, and higher education has become accessible to masses of people. During the period 1945-83, the population of primary schools showed a four-fold increase, as compared with 62 fold increase in secondary education and 138 fold increase in higher education. Since the growth of school population outpaced that of physical facilities, classrooms were overcrowded, making it inevitable to operate on a double or triple-shift system. This means that qualitative improvement could not keep pace with the quantitative growth of education. Educators were torn between the double imperatives of responding to the rising aspiration of the people for education. Korean education is confronted with a host of problems in its effort to provide quality education. Educational conditions remained unimproved; qualified teachers are in shortage, and physical facilities are rundown. On the other hand, the rising standard of living creates social demand for education, pressing for the expansion of educational opportunities. Quantity and quality are exclusive of each other; quantity is pursued at the cost of quality. How to strike a balance between the two is the matter of special concern in policy formulation.

Equalization and Excellence

Equalization and excellence have been recognised as universal principles to be applied in education. But the reality is that the two constitute the opposing ends of policy choices. Notwithstanding the reality, there is a mandate that education parallel one with the other. In the 1960's educational policy swung its pendulum far toward equalization, to eliminate gap among secondary schools in the quality of students and teachers, facilities and other conditions to ensure for all students the education of equal quality. This policy concern was manifested in the abolition of entrance examination to middle school in 1969 and the reform of entrance examination to high school in 1974. But these policy measures produced many problems from the viewpoint of educators advocating excellence.

The pursuit of excellence is occasioned by concern for earlier discovery of individual potential and for the provision of valid programs for the fullest stretching of the potential. This necessitates the diversification of educational programs and the streamlining of supportive systems. Excellence is pursued by differentiating inputs, whereas equalization reflects an effort to equalize them to ensure the output of equal quality. These two principles are not the exclusive concern of secondary education; they pervade all facets of education on all levels.

Educational policy, therefore, is not the matter of selecting one to the virtual exclusion of the other. The validity of policy lies in determining the point of spectrum which offers the best mix of the two choices. Equalization may well serve as the benchmark for inputs to educational system, whereas excellence is sought in outputs, if we are to achieve a balanced development of education.

Tradition and Reform

Korea's liberation from Japan in 1945 was a turning point for the shift of totalitarian rule to an open, democratic system. The shift of political system provided the motive for democratic education to set its foothold in Korea. The past four decades are still regarded as the formative stage, during which efforts were made to eradicate the colonial remnants and explore a viable educational system of its creation, rooted in democratic ideals. Despite the consistent effort, Korean education is still blamed for the absence of its own identity in both theory and practice. Much of the problems are alleged to be associated with the indiscreet acceptance of education theories from foreign countries.

Tradition and reform again form the opposing ends of a spectrum which offers a wide range of different mixes of two choices, depending on local situation. Whatever the required reform may be, it is imperative that Korean education be the outgrowth of its tradition, which allows for modification in this base as new developments call for.

Autonomy and Control

Educational administration has been the matter of choice between autonomy and control. The concepts of autonomy and control become more explicit in relation to private schools and higher education. Universities and private schools are assured of operational autonomy in principle. In actuality, however, need often arises for the intervention of the government which takes the form of control and sanction. It was after the 1960's that the government control on universities was intensified in proportion to its increased supports for private universities. Although the historical background of higher education provided the justification for government control, the fact remains that control is carried too far in relation to private schools.

Educational administration is not the matter of choosing one to the virtual exclusion of the other. The effectiveness of administration lies in the ability to determine the point over the spectrum, which offers the most appropriate mix of two choices. In view of the present position of the government in relation to private schools, it is suggested that educational administration in the future swing its pendulum in favor of autonomy, while maintaining minimum control.

II

CURRENT STATUS OF KOREAN EDUCATION

As reviewed in the previous chapter, Korean education has steadily developed in its contribution to the inherent goals of education for four decades, while educational policy has been torn between goals and means, between equalization and excellence, between autonomy and control, and between tradition and reform. The process of development was not without problems. The result of neglecting these problems is that they have developed into serious hindrances to educational development. While Korean education is confronted with a host of problems, there still exist a number of factors for the educational development that has been made so far.

The problems are the mistaken view of education, control-oriented administration, insufficient financing, dilapidated educational facilities, the low quality of teachers, quality gap, low socio-status of teachers, etc. These negative factors are countered by the cultural heritage which upheld learning as the prime virtue, the innate creativity of Koreans, economic growth, the growing recognition of education as the major stimulant for national development and technological development. This chapter reviews positive and negative factors for educational development to provide insight into planning for a long-term educational development.

6

1. NEGATIVE FACTORS FOR EDUCATIONAL DEVELOPMENT

Mistaken View of Education

The quantitative growth of Korean education is hardly paralleled anywhere in the world. This rapid growth is the result of combining the burning desire of people for education with positive policy support. Underlying these two factors is the people's view of education.

In viewing education, its ultimate goals – such as the instilling of right character and self-realization – are ignored in primary concern with more immediate effects of education which are considered as means to the paramount goals. The importance of education is recognized for its value as a tool for the pursuit of other goals. In relation to the society and the nation, education is regarded as a tool subservient to the greater goals of the society and the nation. Education is also viewed as a means for personal success and prestige.

The value of education as a tool has dominated the popular view of education and this mistaken view is reflected in educational policies. Although educational contribution to political, economic and social developments is recognized, people lose sight of the ultimate goals of education, with non-educational goals appealing readily to their attention. This lack of attention accounts for the fact that education still remains in back waters, while others are caught in the advancing stream of development. Unless this mistaken view of education is corrected, it will continue to become a negative factor for educational development. Apparently, it deviated school education from its normal path, thus giving rise to many problems.

To cope with the problems, policy measures were enacted and some of them implemented with the effect of making a deep dent in the problems. But the problem was that these policy measures were of repatch type. There was no comprehensive scheme to attack problems on all fronts at the same time. Since the mistaken view of education is intertwined with other social conditions, educational problems resulting from this defy solution through educational efforts alone. It is essential that a comprehensive scheme involving the society in its entirety be developed to get at the root of problems. Any policy short of this will find itself in a vicious cycle of problems.

Insuffcient Financing

The startling growth of Korean education in quantitative terms and the effort to improve educational conditions have required an enormous financial input. The cost of education has been on an increasing trend. The budget of the Ministry of Education, which takes the lion's share of the public education cost, has increased to account for 20 percent of total government budget, the second largest proportion next to that of national defense. Including the budget of local governments, private cost and the parent's share of public cost, total expenditure of education accounts for 10.3 percent of GNP.

Even with this enormous amount of financial input to education it was a trickle in meeting educational needs attendant to the explosive growth of school population. There was little improvement of educational conditions and the quality of education is jeopardized.

As shown in Table I-2, the cost of education per student in Korea is unfavorably compared with those of other countries. Considering the need for additional financing created by the forthcoming extension of compulsory education to nine years, educational conditions will drift into worse unless financial input is dramatically increased. The creation of educational tax seems to hold a promise of better financing. Since it is a provisionary device to better educational conditions effective from 1981 to 1986, there won't be a tangible improvement in educational financing in a long-term perspective. Insufficient financing

Table 1-2
Inter-Country Comparison of Education Cost per Student

Nations	Years	GNP (billion dollars)	Per Capita Income	Primary Education	Secondary Education	Higher Education	Percent of Public Education Cost to GNP
Korea	1983	60.1	1,594	319	385	1,447	3.4
Japan	1979	1,000.9	8,638	1,325	1,674	6,737$^{3)}$	5.8$^{3)}$
U.S.A	1979	2,413.9	10,943	2,275	2,275	5,851	6.9$^{4)}$
U.K.	1979	405.4	7,254	845	1,234	6,615$^{2)}$	5.8$^{3)}$
France	1979	574.6	10,744	704	1,953	3,044$^{1)}$	5.0$^{4)}$
W.Germany	1979	766.1	12,490	953	3,854	7,387$^{2)}$	4.7

Note : 1) 1977, 2) 1978, 3) 1980, 4) 1981

Source : 1) Japan Ministry of Education, *Bulletin of Education*, 1983.
2) UNESCO, *Statistical Yearbook*, 1983.
3) Korean MOE, *Statistical Yearbook of Education*, 1983.

will continue to act as a major impedement to educational development.

Low Morale of Teachers

Among others, the teacher is the most decisive factor for the quality of education. Therefore, the motive to become a teacher, their morale and professional competency have profound impact on the outcome of education. These internal elements have much to do with conditional factors, such as recruitment system, incentive mechanism, socio-economic status, etc.

Looking back over the past four decades, it can't be said that Korean education offered satisfactory conditions encouraging teachers to upgrade the quality of education. With the advent of more lucrative jobs in the process of industrialization, schools suffered the drain of able teachers and the morale of incumbent teachers dropped to a dangerously low point. Amid the diminishing number of teachers, the number of students rose and teachers were overloaded, deprived of concern for quality education. As shown in Table I-3, teacher-student ratio of Korea is unfavourably compared with those of other countries.

The low morale of teachers is also ascribed to administrative problems, such as the lack of opportunity for promotion, inefficiency of teacher training system and the dominance of administrators over teachers. Unless these external factors are coordinated to restore the social and economic rewards of teachers, we can not expect education to restore higher quality.

Table I-3
Comparison of Teacher-Student Ratios Among Different Countries.

Countries	Years	Elementary Education	Secondary Education	Higher Education
Korea	1983	45.6	37.2	34.1
Japan	1981	25.0	18.1	17.6
Taiwan	1981	31.5	19.2	20.1
U.S.A	1979	21.1	13.8	14.1
U.K.	1980	18.9	16.7	8.8
France	1979	20.0	13.7	20.4
W.Germany	1980	18.4	14.4	7.1

Source : 1) Ministry of Education, Republic of China, *Educational Statistics*, 1982.
2) Korean Ministry of Education, *Statistical Yearbook of Education*, 1983.
3) Japan Ministry of Education, *Statistical Bulletin of Education*, 1983.
4) UNESCO, *Statistical Yearbook*, 1983.

Shortage and Dilapidation of Educational Facilities

While the teacher is the human factor, physical facilities and equipment are the material factors which have as much bearing in the quality of education. As the result of rapid school population growth outpacing the expansion of school facilities, primary and secondary schools today are overcrowded, rendering it impossible to cater education to individual needs.

With primary concern to provide places for the rapidly increasing number of students, external facilities came to forefront of thinking, little attention being directed to internal facilities and equipment. What makes the matter worse is that much of the existing facilities are rundown. School facilities are still in backwaters of underdevelopment, while non-school facilities are in an advancing stream. The rapidly developing frontiers of science and technology make what is taught at school obsolete in a matter of some years. And the teaching method is hardly open to change whatever the call is heard for its innovation. The accummulated effect of these problems casts dark shadow over education in the future.

Irrelevant Contents and Methods

The change of time and society creates a new vision of what man should be like. If education fails to embody the new vision, man becomes a misfit for the society. The result is that the society is brought to stagnancy and value conflict ensues therefrom. To capture the new vision of man, efforts should continuously be made to redefine educational goals and renew contents in view of the overshifting frame of reference.

In the past, Korean education was blamed for the "absence of ideal" and "dichotomy between ideal and practice." In other words, there was not much of efforts to reflect the vision of an educated person in school education. The content materials of instruction remained unchanged in the rapidly developing frontiers of science and technology. No matter how acute the call for change, there was no institutional mechanism to facilitate the renewal of content of instruction. Curriculum should be the outgrowth of in-depth, systematic studies and tryouts over a long span of time. Any attempt at curricular reform to meet short-sighted needs will lead to its departure from what is required by the society.

The method of teaching has improved little from what it used to be 40 years ago. A good many new method was tried out, but their impact on teaching-learning process is negligible. New methods were accepted and disappeared like faddism. Whatever the reform was made, it was of repatch type,' done on a scatter-short basis. In the overcrowded situation, lecture is the norm due to the convenience of railroading instruction, and still classroom instruction is highly labor-intensive.

The startling advancement of science and technology directed our attention to the wonders of educational technology. Yet they were not fully tapped to have a meaningful bearing on the process of instruction. While clamour is heightening for the development of reasoning, critical thinking and creativity, what is happening in classroom remains aloof from the new needs.

Gap in the Quality of Education

Social equality is realized by combining the equal distribution of income with the equalization of access to education. Considering that education is the right of people as well as a duty, equal access to education becomes a matter of utmost attention in the society and the nation.

In terms of enrollment, the educational policy may well be credited with its contribution to the equalization of social status. Viewed from the quality of education, gap exists among localities and among social classes. The gap is notably wide in higher education, as its institutions are congested in Seoul and its vicinity. Adding the dimension of physical conditions, the gap is even greater. Although urban schools have the disadvantage of limited space and overcrowded classrooms, they are favored with more able teachers. By and large, urban schools excel rural schools in educational conditions. The gap exists between private and public schools on the secondary level. In higher education, many of private institutes which enroll 75 percent of total enrollment are not comparable with national institutes. As policy measures were taken to equalize educational inputs, regional disparity in educational conditions diminished markedly. Yet it dies hard in some regions.

"Equality in access to education" has both quantitative and qualitative dimensions; it means not only equality in enrollment but

Table I-4
Enrollment in Higher Education

Regions	Distribution of Relevent Age Group (%)	Distribution of Enrollment (%)	Enrollment Ratio (%)	Number of Student per 10,000 population (person)
Seoul	21.5	31.5	42.90	371
Kyonggi	13.1	11.7	26.37	234
Chungchong	12.3	10.9	26.02	244
Youngnam	30.8	28.0	26.71	242
Honam	16.4	13.4	23.95	217
Kangwon	4.6	3.6	22.55	196
Cheju	1.3	1.0	22.46	209
Total	100.0	100.0	29.37	263

Sources : 1) Economic Planning Board, *1980's Population Census on Population and Houses*, 1982.
2) MOE, *Statistical Yearbook of Education*, 1983.

equal access to quality education under the same condition. Viewed from these two dimensions, regional disparity is coupled with quality gap among schools. If this gap is left unheeded, it will continue to be a drag on educational development.

2. POSITIVE FACTORS FOR EDUCATIONAL DEVELOPMENT

Tradition of Honoring Learning

Korean people have an unusually high degree of enthusiasm for learning, which is rooted in their cultural tradition. The value attached to learning is reflected in the hierarchical view of occupations, which ranks scholars on the top, farmers in the middle and skilled persons and merchants at the bottom. This value system in a way has its negative impact on educational development. But there is no denying that it has been the major source of Korean's enthusiasm for learning which could hardly find its parallel anywhere in the world.

As for the negative impact of enthusiasm for learning, we can readily cite a number of problems, aptly described by "repeaters". Private tutoring once flourished out of proportion to school education as an added insurance of pass in the entrance examination to the next higher level of schooling. Mother's excessive concern for education carried her intevention into classroom, thus limiting the latitude of teacher. The unsuccessful bidders for college entrance swell the backlog of repeaters who are in the vicious cycle of preparation for entrance examination. These problems, however, appear dwarfed when the positive effect of enthusiasm is considered. The increase in enrollment and the enhancement of educational attainment at large mean so much spill-over effect of education to the society. The fact that schools supplied trained persons in the process of industrialization awakens us to the contribution of education to economic development. Let's suppose the alternative situation where school dropouts are in a large proportion and even those who remain in school are not serious about learning. The result might have been far off from what we have today. All in all, the high degree of enthusiasm for learning has been the source of driving force for social and economic development and will constitute a potential to be fully tapped to provide blood to the vital artery of development.

Innate Quality of Koreans

The ultimate goal of education is to stretch the innate potential of human being to the fullest measure. Therefore, the success of education is largely dependent on the potential with which the people are born. Man's potential is divided into cognitive, affective and psychomotor domains.

Koreans are born with excellent intellectuality, creativity, resilience and adaptability, as they demonstrated through the thorny path of struggles over millenia. As a weakling sandwiched among giant countries, it has maintained political and cultural identity of its own creation. Repeated pounding of foreign hammars simply steeled their will to survive sufferings and actively seek development. Among others, the excellent quality of Korean people offers itself as the source of a new dynamism, when it is properly tapped through education.

Political and Social Stability

The social and public functions of education suggest that education is inextricably bound up with political and social systems. It is a worldwide trend that the role of education in national and social development receives growing recognition.

Educational development has a broad connotation encompassing the enlargement and equalization of access to education, rational operation of educational system, enhanced social productivity of education, provision of relevant educational experience and greater outcome of education. It is crucially important, at this point, to bear in mind that education is in a dynamic relation with political and social systems. This means that educational development is accelerated when the political and social systems are put on the rock of stability.

With the advent of the Fifth Republic in 1980, political and social stability was restored as the new government sought its national development along (1) the development of democratic system viable in Korean setting, (2) establishment of welfare state, (3) realization of social justice and (4) educational innovation and the re-creation of culture. These policy goals emphasized the role of education in the realization of democracy, welfare and social justice. And educational development was set in the direction of augmenting educational system in performing its roles to these effects.

The political ideal of democracy sets the framework for what the educational system should be like. It directs efforts to ensure the political neutrality for education and to operate educational systems through participatory process. The policy goal holds education responsible for sensitizing children to social justice and the welfare of people at large so that they develop attitude inclined toward the realization of society based on these ideals.

Higher Standard of Living

The burning desire of people to rank among the developed nations enriched the material life of Koreans. The unparalleled record of economic development will carry its aftermath through many years to come. In view of world economy, as it stands, and the Korean potential of economic growth, it is expected that Korean economy will register an annual growth of 7 percent until the year 2000. Per capita income will rise from $1,500 in 1983 to $4,000 in 2000 (at the 1980's fixed price). Through the government's active involvement in the redistribution of income, income gap among social classes and localities will diminish considerably.

Economic development strategy entails an increasing demand for high level manpower, and education to meet new needs requires greater financial commitments. The government spending on education may not increase dramatically, since it is tied to the priority order of national policy. But the rising standards of living will enable the people to bear the greater burden of financing education, responsive to the increasing requirement of educational investment.

Accelerated Advancement of Science and Technology

The world is now undergoing the second industrial revolution, which confronts Korea with a new era where new demands flare up in all fronts. Education is the pace-setter for science and technological development and its development is facilitated by drawing on the latter. Competition among the nations is gaining intensity in high technology, giving rise to greater demand for high-level manpower. To promote the development of science and technology, basic sciences assume an important dimension in elementary and secondary education. This new need will arouse the interest of higher education in basic sciences and stimulate efforts to upgrade its quality.

The advancement of science and technology will bring its impact to bear down on the process of instruction. Educational technology will be fully tapped as the new source of breakthrough for the individualization and diversification of instruction process, which maximize the outcome of learning. The advent of computer means new additions to teaching methods and the development of information industry poses propitious implications for the enhancement of administrative effectiveness and efficiency.

New Importance of Education

Apart from the ultimate goals of education, self-realization and the instilling of right character, the social function of education receives growing attention in the emerging nations. As demonstrated by the world history, education is the very foundation of a nation and the prosperity of nation is exclusively dependent on the success of its education.

Recognizing the importance of education in a new perspective, the Constitution of the Fifth Republic included a new provision for "life-long education." Educational reform was proclaimed as one of the four policy goals. This encouraged efforts to intensify educational reforms in a broader context. The celebrated termination of private tutoring reflects the bold attempt of the government to restore education to its normal order and to prepare it for new roles, as called for in a new situation.

As such, the importance of education was recognized not only for its inherent role in assisting in self-fulfilment and the instilling of right character but for its subsidiary roles along with other goals. This new recognition is widely spreading from top policy makers down to students. Now that this recognition is instilled into the minds of people, it is expected to build a climate supportive of greater financial commitment and innovative efforts on the part of the government, social organizations and the beneficiaries.

III

CHANGE OF EDUCATIONAL ENVIRONMENTS

Looking into the future, several decades to come will be fraught with uncertainty. What is apparent, however, is the thickening trend of political and economic interdependency among nations, while ideological bipolarization dominated by the two super-powers is giving way to multipolarization. By and large, the economic growth of the world is expected to slow down. National interest is pitting one country against anothers and intercountry competition will gain intensity. and technological development, will give prominence to the middle class, typical of advanced countries. Democracy, rationality and the welfare of people will be considered the prime virtues. Coexistent with this changing pattern, however, is the trend of dehumanization; the society will become increasingly impersonal. It is in this context that education finds its new role to play.

This chapter previews the changing trends of political, economic, socail and cultural surroundings and a way how they will affect education and set the direction of educational development that enables education to actively respond to new needs.

1. CHANGING TREND OF INTERNATIONAL RELATION

New Political and Economic Order

The political and economic order of the world began to be shaken in the early 1970's and it is still drifting without direction. The conclusion of the World War II divided the world into the western and the eastern blocks dominated by the United States and Soviet Russia respectively. Coming into the 1970's, the bipolarized world saw the rise of new powers which are away the dominance ot the two superpowers. In the western world, the influence of the United States shrank with the rise of Europe and Japan to prominence. The eastern block saw the rise of China to rival Soviet Russia. The international relation today is characterized by inter-dependency and this trend crosses ideological borderlines. The two blocks were brought into a close relation of inter-dependency. The third world countries were organized into a coherent supra national body defending their own interests. Oil-producing countries made their influence felt in the international scene. The rapidly developing countries are stamping their feet for recognition of the new role they play in the world. All of these new developments put a different complexion on the scene of international dynamics.

This shift of international relation from bipolarization to multipolarization is the sweeping scene of the world and this trend will continue for a good many decades to come. The world politics is still dominated by the Unites States and Soviet Russia. In view of what has happened, the leadership of each country in its own sphere of influence will diminish considerably and each sphere will lose its coherence. The future of international dynamics defies prediction.

While multipolarization continues, armament race will dominate the relation of the two superpowers. Each, knowing the limit of armament race, will endeavor to bring its counterpart to conference table to explore peaceful terms of solution. The status quo of rivalry relation allows for neither pessimistic nor optimistic view of the future.

In the western block, the frequent conflict of economic interests between the United States, EC and Japan weakened the coherence of the block. Many of them seek to maintain ideological neutrality and autonomy. The Sino-Soviet relation, which drifted into the abyss of antagonism, will be restored to some extent. But it is not likely that this thawing mood will lead to the earlier relation of amity. The countries in the eastern blocs are increasingly dependent on the economic aid of western countries in proportion to the diminishing aid of Soviet Russia. Nationalism is rearing its head in many countries of the eastern bloc. The Soviet Russia will see its influence shaken to the root.

The restoration of Sino-Soviet relation to normalcy will lend fluidity to their relation with Korea, Taiwan, Cambodia and Japan. The demise of bi-polar structure is sure to increase inter-dependency between the two blocs and give prominence to economic interests over political ones. The loosened economic order related to trade, IMF and resources may take longer time to be restored to normalcy. The effort of one country to promote its economic interests will put it into collision with other countries. Even the superpowers no longer have control on other countries in promoting their own economic interests. The fear of collision will drive each country to seek protectionism and monopoly on high technology. Economic aid to under-developed countries will diminish and import quota imposed against the goods of developing countries will drift the world economy into stagnancy. The result is that conflict between the north and south will be more intensified.

By and large, primary concern with national interests will make it difficult to restore the world order in the foreseeable future. But the new trend of multi - polarization creates a new situation for a divided country like Korea to bounce back with a new zeal. It is imperative that Korea adopt an open economic system, strenuously seeking to establish diplomatic relations with both developed and under-developed countries across ideological borderline.

Inter - dependence

The decline of ideological concerns gives so much rise to inter-dependence among nations across geographical, racial and religious barriers. But the decentralization of power may deprive the world order of control needed to solve global problems. With the leadership of super power weakened, other countries enjoy greater latitude of behaviors. National interest will bind countries in the form of bilateral agreement on trade.

The inter-dependence relation will flourish most notably in economic sector and this trend will be further precipitated by the development of transportation and communication means, spearheaded by electronic and space sciences. The development of international monetary fund, the accumulation of capital and the enlarged trade of commodities, all are one in promoting the trend of inter-dependency.

The international division of labor will be promoted as the result of growing inter - country dependence. The heavy and chemical industry which used to be the monopoly of advanced countries will move to developing countries, and the labor-intensive industries from developing to under-developed countries. While the international division of labor is proceeding, the conflict of national interests will be inevitable between countries in the same stages of development as well as between the developed and less - developed countries.

As inter - dependency trend thickens, inter - country cooperation will increase in scale and its form will be diversified. It will facilitate the flow not only of capital but of information and technological know-how. The cooperation, traditionally limited to the north and the south will be extended to the relation between the west and the east as well as between countries in the same region. This trend stimulated the effort to form an economic bloc which consists of those countries sharing the same interests. Accordingly, the regionally-based cooperation is becoming the dominant feature of world economic order. EC and ASEAN are good examples of this model. Since these economic blocs are entrenched with protectionism, exclusive of non-member countries, a new movement is taking shape among the countries of Pacific rim. The center of gravity shifted from the Mediterranean to the Atlantic rim, and will shift again from the Atlantic to the Pacific rim.

Slow Growth

1970's is called the decade of economic crisis. The two decades preceding it saw the booming of the world economy and the following two decades will see a slow growth of world economy. While the economic order of the world has not been recovered from the earlier shock, each nation is primarily concerned with its national interest to the exclusion of greater good of the world. Advanced countries are adopting protectionism, exerting a drag on the potential economic growth of less-developed countries.

Although the economic growth of the world will fluctuate, it will show a steady and slow growth until the year 2000. As the present trend of multipolarization is expected to creat a new power structure of the world by the 1990's, economic growth will regain vitality by this time. What is apparent, however, is that the rapid economic growth that was registered in the past will not come again.

The advanced countries which used to spearhead the economic booming of the world no longer have the leverage to give vitality to their own economy. The rigidity of labor market and the burden of promoting social security complicate their attempts to control economic growth. Many of advanced countries have grappled with high unemployment over a long time, yet with no prospect in sight of getting out of it.

Growth gap will become wider between the developed and developing countries. As happening in advanced countries, the increasing proportion of aged population and their habitual dependency on social security will innervate the working desire of the people. Technological innovation is the prime mover of economic growth. However, since new technologies are limited to a few items small enough to bring material or energy saving, they will not be enough to lead off economic recovery in all aspects.

The economic growth of developing countries is expected to outpace those of deveoped countries. But the rapid growth of population will take a deep bite out of the economic gain in the developing countries. These countries will have difficulty breaking loose from the vicious cycle of poverty. Income gap between the north and the south will become wider.

2. CHANGE OF INTERNAL SITUATION

Change of Population Structure

The population growth of Korea will slow down, with its annual growth to reach 1 percent by 2001. With the active involvement of the government in population control, the average birth rate which stood at 2.4 percent in 1980 will be down to 1.6 percent. The improvement of maternal/child health will drop infant death rate and the improving diet will lengthen the average life expectancy from 62 (male) and

68 (female) in 1980 to 70 and 75 respectively by 2001. The average annual death rate will drop from 0.7 percent in 1980 to 0.6 percent in 2001.

Despite the incremental decline of population growth, there will be a net increase of 600,000 per year, adding 5,000,000 mouths to be fed by 2001. Therefore, population continues to be burdensome.

Population growth also brings about the change of population structure by age, which poses meaningful implication of politics, economy, society, culture and education. Population pyramid will resemble a jar. Those under the age of 14 will decline in proportion, while the economically active population from 15 to 64 and aged people over 65 will bulge markedly.

During this period, a larger proportion of economically active population will engage in productive works. As standards of living rise and employment requires more years of schooling, youth workers will decrease in number. On the other hand, female and adult workers will increase markedly. The growth of economically active population will outpace that of total population growth, with its annual growth rate revolving around 2 percent.

With the decline of youth workers, the labor intensive industries dependent on cheap labor cost will suffer a serious shortage of workers. As call is heightening for higher productivity in all industries, technological development is accentuated toward labor saving. This will create new jobs, while making the existent ones obsolete. The turnover of jobs will be accelerated.

The proportion of elementary (6–11) and secondary population (12–14) will decline, but their absolute numbers will be sustained at 5,000,000 – 6,000,000. This does not mean an additional burden of education cost. Neither does it suggest the possibility of reducing it. It presents an ideal opportunity to extend free, compulsory education to nine years and to provide for the qualitative improvement of education (Table I-5).

Table 1-5
Change of Population Structure by Age

In 1000 persons

Age Groups	1981	1986	1991	1996	2001
0-14		12,672 (30.3)	12,709 (28.3)	12,919 (27.1)	12,713 (25.3)
6-11	5,394	4,815	5,108	5,235	5,115
12-14	2,662	2,687	2,358	2,556	2,616
15-64		27,432 (65.5)	30,078 (67.0)	32,295 (67.7)	34,434 (68.6)
15-17	2,612	2,791	2,453	2,474	2,613
18-21	3,670	3,454	3,678	3,123	3,341
Above 65		1,774 (4.2)	2,107 (4.7)	2,466 (5.2)	3,035 (6.1)
Total Pop.		55,625 (100.0)	58,491 (100.0)	61,068 (100.0)	63,867 (100.0)

Note : Figures in parantheses are percentages.
Source : Report by Population and Health Research Institute, 1983.

The population of high school (15-17) will remain at 2,600,000 and that of higher education (18-21) will show a modest decline, given the same proportions of applicants to high schools and universities. In view of increasing numbers of applicants for high schools and universities, the possible decline of higher education population will be offset, keeping it at a constant level. This also presents an opportunity to upgrade the quality of higher education.

Another dimension of changing population structure is urbanization. So long as industrialization continues and agricultural productivity increases, population migration toward cities will continue. 57 percent of total population are in urban areas in 1980 and this proportion will rise to 73 percent in 2001. This trend foretells that large and middle sized cities will flourish during this period(Table I-6).

While population migration toward cities continues, with the frequent turnover of jobs, migration within a city will take place more frequently. Population congestion in some areas and its unbiased distribution will become a new matter of concern from the educational viewpoint. Regional disparity of education quality and education expenditure and irrelevant program content will remain overriding concerns of educators.

Table I-6
Population Differentiated Between Urban and Rural Areas

(%)

Regions	1981	1986	1991	1996	2001
Urban	57	64	69	72	73
Rural	43	36	31	28	27

Realization of Democracy

The political entity of Korea is keenly affected by political situations at home and abroad. The multi-polarization of world power structure will give Korea a motive to break loose from its ideological confrontation and to seek practical policy that serves its own interest. So long as the four world powers want to maintain status quo in Far East, the national unification of Korea will remain a remote goal. No matter what the world powers want, the bellicose North Korea will continue to threat the security of the south. The south will continue to bring the north into dialogue, thus assuring peaceful coexistence in the Korean peninsula.

Pending territorial unification, the north - south relation will remain short of direct military confrontation and instead gradually take on the tone of coexistent, rivalry relation. It is imperative that Korea seek to establish diplomatic relations with the third-world countries and communist countries. At home, efforts will be made to ensure the unity of people behind the cause of democracy.

The realization of democracy in practical terms will be made possible by building a citizen's society where its members are highly conscious of participation in political process. Higher standards of living, more years of schooling and the development of mass media thickened the middle class, which formed the main stay of democratic society. Citizen's participation in political process is not only through voting; it is through the organization of interest groups that masses of people have direct participation in political process. This participatory system also provides the mechanism of supervising and controlling the government and policy makers.

In the society where occupation is highly diversified, any political issue is in one way or another linked to the interest of all social classes. This provokes movement among the people sharing the same interest to effect a collective power to pursue or defend their own interests. It is through a body of representatives or political party that their interests are reflected in political process.

The society which is buttressed by middle class does not pursue radical change; it seeks a progressive change through a rational procedure that reflects the opinions of its members. The middle class will become the stabilizing force for the society and the counter-force against the government and rulers. It will form an undercurrent that survives the change of powers.

The dominance of middle class will do much to curtail dogmatism and authoritarianism. But industrialization and urbanization attaches greater importance to the efficiency of bureaucratic leadership. Its rivalry relation with North Korea may heighten the importance of bureaucratic efficiency over the redundant formalities of participatory politics. Regarding how to maintain the superiority of the south over the north, some will advocate resort the democracy, and others assert bureaucratic efficiency as the short cut to the end. In a long run, democracy will win over bureaucratic efficiency.

The growing complication of society diversifies the people's claims. As a result, interest groups increase in number. Since each group pursues different interests from others, they are in a continuing state of conflict with one another. The conflict of interest brings about collective bargaining among the representatives of interest groups and political parties provide the mechanism of reconciliation. In this way, party politics will set its firm foothold in Korea.

Industrialized and Welfare State

Until the year 2000 fundamental constraints on economic development will remain unabated. Limited land, over-populatedness, and poor natural endowment will continue to be a drag on economic development. Other constraints such as the shortage of domestic capital, parochial marketing and under-developed technology may be alleviated considerably, but not to the extent that brings forth a marked improvement of conditions for economic development.

In view of these constraints, the growth of Korean economy will be largely reliant on imported capital, resources and technology on one hand and export-oriented development will pit Korea against other countries in the world area which sees the thickening of protectionism. In this view, the direction of economic development is set by addressing the question of "how to sharpen the competitive edge of Korean economy."

In earlier stages of development which corresponded in the early

1960's labor forces which could be purchased at lower cost and in sufficient number made Korean products competitive in the international market. It was on account of this factor that Korea was successful in developing export-oriented industries. The need to further the development of export-oriented industries is heightened, considering that they are the only viable alternative to economic growth in a country unfavorably endowed with natural resources.

Inter-country cooperation will be expanded in scale and diversified in kind. In order to increase exports in goods and services, Korea will not grudge the importing of foreign capital and technology. The international division of labor will encourage reciprocal exchange of goods and services. In relation to less developed countries, Korea will establish a favored, mutually-assisting relation, whereby Korea lends supports to their efforts for economic development and export goods and services. In competition with other countries, cost will be no longer the favored leverage. In order to maintain competitive edge, Korean industries should streamline their managerial system and develop new technologies so that they outbid foreign counterparts by quality.

Advanced countries will shift away from heavy and chemical industries in favor of high technologies in electronics, communication and genetics. Amid this trend, Korea is expected to maintain a competitive edge in heavy and chemical industries. Since it is not economical to produce substitutes for all products which might as well be imported, Korea will focus on a few items which are relatively competitive in foreign markets. Focusing on these items may place Korea in a position to receive industries discarded by advanced countries. Going one step further, Korea should challenge these countries in high technologies. Should this trend continued, Korea will have shaken off labor or capital-intensive industries by the late 1990's.

Development policy will change its direction. By gleaning lessons from its trials and errors, efforts will be made to readdress imbalances. The government-initiated development will give way to encourage the leadership of private sector open to the principles of free marketing. The role of government will change from control and intervention to support and encouragement so that industries enjoy a greater latitude of activities. Discarding the status of dependent servant, they will become an independent master of their destiny open to a new harsh reality. They may have to be more enterprising to survive on their own footing.

The people will be increasingly conscious of rationality and disposed to live a life of thrift and saving. Meritocracy will be instilled in them. They will be more conscious of occupational duty and motivated to move upward through the ladder of socio-economic status.

The importance of agriculture which has diminished relatively to the aggrandizement of industries will be reappreciated in a new perspective. According to the policy to readdress the unbalanced development of industry, small and middle-sized industries will be given support to develop. New development strategy will no longer give priviledged supports to enterpreneurs and capitalists, as it redirects its attention to consumers and workers. The latter will be encouraged to organize into a group so that they facilitate the protection of their interests. Efforts will be made to minimize the conflict of interests by keeping groups in checks and balance.

In view of the changing structure of industry and the potential growth of Korean economy, Korea will register the average economic growth of 7 percent per annum until 2000. Taking into account population growth, per capita income will reach $4,060 in 2000, the equivalency to the middle-level of today's advanced countries (Table I-7).

Table I-7
Projection of Major Economic Indices

Classification	1982	1990	2000	Annual increase(%) 1983-90	 1991-2000
GNP (at 1980's constant price)	38,500 billion won	69,000 billion won	132,000 billion won	7.5	6.7
GNP deflator (1980-100)	125.1	171.2	265.9	4.0	4.5
Per capita GNP (at 1980's constant price)	$1,441	$2,260	$4,060	5.8	6.0
Exports	$20.9 billion	$60.5 billion	$199 billion	14.2	12.5
Imports	$23.5 billion	$60.5 billion	$193 billion	12.6	12.3

Source : Korea Development Institute, 1983.

Higher income will enable an individual person to enhance the quality of life, with an increasing concern for the welfare of people at large. Cry will be more strongly pronounced to ensure the well-being of aged people, farmers, workers, physically handicapped and needy people. Insurance and pension system will develop with its kind more diversified. Particularly, the well-being of workers in large enterprises and social welfare will receive greater attention.

Social Diversification

The most prominent trends of contemporary society are social diversification and the organization of individuals into institutional bodies. The society is diversified in terms of function, occupation, interest, and class. This trend in turn provokes an attempt of individuals to cluster around the common denominator of their interests. Organizations are mushrooming, in number, while each is enlarged in scale and size.

The Korean society envisioned for the year 2000 will be dominated by the characteristics of industrialized society. As typical of advanced countries, there will be a force to counter the ruthless onslaught of industrialization. Industries will be differentiated; occupation diversified and professionality heightened. This trend creates gap in income and social recognition which in turn precipitates the stratification of social classes. Social organizations come into being and are recognized as the vital means of life.

Industrialization entails urbanization. Population migrates toward industries which yield higher income and these industries are concentrated in urban areas. Industrialization and urbanization are in a mutually-reinforcing relation. By 2001, 73 percent of total population will reside in cities. Since a large city is congested with people of different backgrounds, person-to-person relation becomes complicated and impersonal.

As industrialization proceeds, social mobility of people will gain momentum. Given a small part to do in a giant machinery of society, people will become more individualistic. The extended family will give way to the nuclear family and the role of home will change markedly. The production and educational role that used to be played by the patriarchal system of family will be relegated exclusively to professional organizations. The vertical relation inherent in the traditional family will change to horizontal relation which binds the members on an equal basis. Elderly people, stripped of the prestigious position within a family, will drift away trom the family to seek comfort from the company of the same people. The aged people drifting away from home will cause serious social problems.

The development of industries invites mass production and mass consumption, and this in turn stimulates technological innovations. The automation of production alters even social structure as well as the nature of work. Organizations are aggrandized, while there merges a new attempt to standardize them. To help large organizations to survive in a highly diversified society, information management system will assume greater importance as a feeler to sound out what is coming upon.

The diversification of society, coupled with the aggrandizement of organizations, will cause the feeling of alienation on the part of human beings. They will be awakened to a new consciousness, and stirred to new effort to counter standardization, concentration and aggrandizement. The new force will argue for "a man of multi-dimension," with respect for the creativity and autonomy of human being free from external forces which set limits to the freedom of thinking and behavior. Science and technological development set this consciousness into action. The advent of computer, for example, promotes a counter-trend toward decentralization, individualization and multi-dimensions to be embodied in a person.

With the help of computer, consumers can have the choice of designs and kinds they prefer and, in this way, consumers participate in the process of production. The development of communication means will spread the habitats of human beings over large space. Computer will make it possible to diversify and individualize instruction process. A wide variety of mass media help human beings to enrich their life experience and develop multi-dimensionism in the shaping of character.

Multi-dimensionism will enrich the cultural life of people and render it more accommodative of deviations of behaviors from the norms. This trend will give prevalence to humanism and demassification, which stress the importance of family and regional society. The school, the society and occupation will be brought into a closer tie and the zeal for the realization of democracy and egalitarianism will be renewed.

New trends, which are exclusive of each other, are taking shape over the horizon. In view of the chaotic situation resulting from their collision, social transformation can not be left to haphazard process. Drawing on the experience of advanced countries, efforts should be made to discern the desirables from the undesirables and to tilt the direction of transformation toward the desirables.

Science and Technological Innovations

The world is entering the Second Industrial Revolution, which is spearheaded by electronics, mechatronics and biotechnology. The invention of conductor reduced the size of computer into a portable one which exerted a far-reaching impact on the daily life of people. The computer, the machine of engineered human intelligence, has begun to work its wonders which defy human imagination. Another to spearhead technological innovations is communication technology. While computer is refered to as the extension of or a substitute for human cybernetics, communication technology is refered to as the extension or substitute for human nerves.

The First Industrial Revolution produced machines that replaced human hands. Now with new machines developed to substitute human brain and nerve, the advent of a new machine is forthcoming, which replaces man in its entirety. It promotes a trend toward factory automation, office automation, agricultural automation and home automation, all liberating human beings from manual works.

Unlike production machines, electronic machine has partial application to production and it does not require a massive investment. The development of electronic technology is largely limited to the production of small-sized items. The social implication of the new technology is that it helps a great deal to reverse the direction of social transformation from standardization, massification, and concentration to multi-dimensionism, demassification, and decentralization. The influence of new technology is pervasive into political, economic and social life of people.

The startling progress of bio-technology gave rise to new pharmaceutical products. Interperon and insulin which are the direct outgrowth of bio-technological development have already worked their wonders in lengthening the span of life and many have yet to come out of laboratory. Biotechnology also has positive implications for productivity. By heightening labor productivity, it encourages the development of labor-saving industries. It seeks a new production method that saves energy and materials. The subsidiary effect of new technology is found in its relation with moral and social order; it may be destructive of the existent moral order.

More technologies have yet to come about. By the late 20th century, these will be brought to bear on the daily life of people and technological competition will gain intensity among nations. Development strategy in Korea will continue to give heavy and chemical industries a central focus until 2000, while facing squarely new challenges to pioneer high technologies.

Technological innovation is expected in the development of energy resources. The use of atomic energy, solar energy, and tidal energy, will increase. New technologies will be developed to recycle wastages and tap the ocean for energy and food. Greater attention will be directed to the preservation of natural environment, betterment of living conditions and the improvement of medical cares and welfares for masses of people.

To begin with, technological development will place heavy reliance on imported technology. With the passage of time, R & D will receive a larger proportion of investment. Encouragement and support will be given to higher education and research institutes in their efforts to develop research capabilities. Applied science will be accorded

Table I-8
Projected Indices of Science and Technology Development

Classification	1980	1990	2000
R & D	$391 million	$1,659 million	$5,190 million
Ratio to GNP (%)	0.61	1.50	2.50
Government vs. private sector	52:48	40:60	30:70
Researchers	18,434	44,261	75,099
Number per 1000 people (%)	0.48	1.0	1.5
R&D cost per researcher	$21,200	$37,500	$69,100

Note : Excludes R & D for National Defense.
Source : Ministry of Science and Technology, 1983.

greater support in a way that ensures a balanced development with basic sciences.

Living in the era of science and technology, scientific thinking and reasoning are the essential qualities of people. Education should do its part in instilling these abilities at earlier stages of development and developing scientific consciousness of people at large. It is also important to ensure that scientific thinking be instilled in their ways of coping with political, social and economic problems.

IV

DIRECTION AND GOALS OF EDUCATIONAL DEVELOPMENT

In order to define the qualitative goal of education, it may be well to address the question of "what is the human character to be cultivated through education?" The quantitative goal of education may be defined in terms of educational conditions needed to achieve the qualitative goal of education.

To describe the ideal profile of an educated person in simple and implicative terms, it is "a person capable of self-realization." Every individual has a motive to dramatise his or her potential to achieve his or her life-long goal. The achievement of this goal gives one a sense of immense satisfaction. This chapter presents eight qualities which are believed to creat the ability of self-realization.

The quantitative goals of educational development were established on the basis of accomplishments made over forty years, in comparison with the standards of foreign countries and in view of projected demand and available resources. The gap between what is envisioned for the year 2000 and the present status of education provided clues to the direction of educational development. Development policy was considered in a way that bridges the gap in a consistent fashion from long term perspective.

1. THE PROFILE OF EDUCATED PERSON IN THE 2000'S

Person with Subjective Consciousness

A person with subjective consciousness actively adapts to changing situations. Such a person is willing or prepared to become the master of his surroundings. He has an explicit life goal and the pursuit of this goal gives significance to life. His action is not stymied by customs, since he explores ways for self-growth relying his innate potential and marshalling all available resources. For a person strongly motivated for self-reliance, external conditions are of little importance. A person with a sense of identity is never abrasive and avoids self-righteousness, chauvinistic attitudes and exclusiveness. Subjective behavior presupposes deep contemplation before action and the sense of responsibility for the consequences of his own behaviors. Such a person gives recognition to the subjective behaviors of others and this recognition serves as a constraint on his own behaviors.

As a member of the national community, subjectivity assumes an important dimension. The subjectivity of people means a unique identity by which the people are distinguished from others. Therefore, it is the source of pride as a homogeneous people. Korean people are oriented to determine their destiny and it can not be entrusted to other peoples. The countries which have created the culture of subjective identity survive in this seething, turbulent world. On the other hand, those which blindly adopt other cultures in the absence of their own root are open to cultural imperialism. Korea has survived numerous foreign incursions throughout its history of four millenia. This historical record should pass for the ability of Koreans to maintain cultural and political identity.

Intelligent Person

Intelligence is a toll with which to keep emotional eruption within the framework of reasoning. Hence, the intelligent person makes decisions on a rational basis and sets great store by righteousness and justice. He justifiably raises question of dogmatism, prejudice, tradition and what has been taken for granted and endeavors to ensure the validity of them with critical eyes. He is open to change with regard to his attitude or position when it proves to be wrong before his inferiors. His thinking is based on logicality and evidence. He makes the point of establishing the priority order of value in the context of relation between goals and means.

The intelligent person sets great store by scientific thinking. He is able to see true facts through the screen of customs, erroneous assumptions and dogmas. He is motivated to explain things in terms of cause-effect relation. He continuously inquire the validity of scientifically proven facts. But his thinking is not dominated by the ruthless objectivity of science; he is as much concerned with the moral dimension of it.

Person with Moral Consciousness

Rapid social transformation shakens the existent moral order of society to the root. Ethics is the essential ingredient of society that keeps its members in a productive relation. The problem is related to the question of which ethics to adopt and how to bring home people the ethical norms.

Moral criteria vary with place and time. "What are the moral principles for the 2000's" is the very question to be addressed by educators. What is apparent about moral principles and value criteria is that they are diversified with the passage of time. In the situation where traditional culture is outshined by a massive influx of alien cultures, value relativity becomes a matter of special attention. The role of education in this vein is to help children to make right value judgement and not to blindly accept the given values.

For the person conscious of morality, the word "should" does not apply. His thinking extends to the question of "whether doing this makes life meaningful?" His recognition that human beings eventually belong to the same community on this planet creates concern for ecological ethics. The person of moral consciousness is cooperative, disposed for the common good of the society and altruistic works. He is highly conscious of individual responsibilities via-à-vis the society. Human relation is stressed as an essential quality of a man with moral consciousness. He continuously seeks the ways of ensuring harmonious co - existence with others. He has empathetic understanding and respect and love for others.

Democratic Citizen

Democracy is a political institution that has long been sought by mankind. But the true meaning of democracy is more pervasive than meeting the eyes; it is a form of life and value apart from being a political philosophy. More than others, democratic system proved to offer better chances for self-realization and self-consummation. Much of the history of advanced countries has been devoted to the development of democratic system.

In Korea, democracy has not penetrated into the daily life of the people, since it has been limited to the ideological dimension. The reason for its failure to take root is that the people are not ready for democracy which was imposed from outside. In order to make democracy the product of their own creation, it should begin with education. Education is held responsible for the cultivation of democratic citizenship among the people.

The master of democratic society is the people. This recognition is crucially important as an initial step to galvanize the members of the society into the awareness of the community and the society. Democratic citizenship is developed by sensitizing its members to rights and responsibilities. In the democratic society, personal character and dignity are respected, and each member is ensured of the right to speak for himself on an equal footing. When different opinions collide, they are ironed out through open discussion. The law, which is the symbol of agreed sanction of all members, is honored. Democratic citizenship enables individual members to distinguish public and private affairs and to give precedence to the former over the latter.

Creative Person

The human history itself is an on-going process of creation. Tradition is the creation of our ancestors and it provides the basis for the creation of new things. The history without creation is something like the current of water that comes to halt. Stagnancy leads to disappearance. The man's creation of new things has been accelerated over the past few decades. What has happened over this period surpassed accomplishments made over millenia. The future is the extention of creation in this rapid process and it defies projection with any degree of accuracy. The only way to survive in this rapid torrent of change is to lead the change, not to be driven by it. This is made possible only by a creative man.

Creative man is not content with status quo. He is driven by motive to inquire into the unknown and to step into unbeaten path. He is venturesome and derives a sense of thrilling from challenging what others are fear of. To him, the present is one of alternative possibilities. His imagination of the future unleashes a powerful drive to organize necessary condition to accomplish it. He prefers heterogeneity and diversity to homogeneity and uniformity. He is open to outsiders, for creative development is made possible by opening its process to diverse opinions and criticism. He is not retrospective of the past but is driven by imagination to the future. When the people are creative, encompassing all of these qualities, they will more than compensate the unfavorable endowment of natural resources. The role of education is to light the fuse of creativity of Korean people.

Cosmopolitanized Person

The advancement of transportation and communication technologies shrank the world into a community. Now, this planet is referred to as "a global village" or "a spaceship of the earth." Sometime in the history of mankind, different civilizations existed with no contact whatsoever among them. Today, it is by no means possible for a civilization to remain in separation from others.

As inter-country exchange gains momentum, people should adopt active adaptation to new situations. The economic gains Korea has made in recent years is the result of active adaptation. This attitude should extend to other spheres of life. Active adaptation can be more specifically defined in terms of the qualities of a cosmopolitanized person.

The cosmopolitanized person is aggressive in that the field of his action is not limited to home country; the world is the stage on which he realizes his dream. He has the sense of pride in the cultural heritage of Korea and seeks to disseminate it worldwide. He is accommodative of other cultures and seeks to create a new one which is inevitably a blend of old and new ones. Science and technological development is the result of cross-fertilization among different countries, and the cosmopolitanized person is a catalyst for the exchanges of technological know-how.

Healthy Person

Health is the absolute condition of happiness. The achievement of goals in life is possible when one is healthy, for health enables one to stretch his innate potential for growth. Health has two dimensions–bodily and spiritual–and these are in a mutually complementary relation. Healthy body comes from having a spiritual health. To put it in other way, healthy body does not exist without spiritual health.

The modern society brings with it many evils that hurt the spiritual health of its members. While occupations are diversified, the society is increasingly fragmented, reducing an individual to a tiny cog of a complicate machinery. The latitude of one's actions is limited and the surrounding becomes more and more impersonal. The result is that people are stripped of chances to meet their own desires.

Education should prepare people for this new threat. School has played a low-key role in the promotion of health. More actively, it should seek to offer conditions to meet aesthetic, social and emotional needs of youngsters. To do this, more space and facilities should be secured and school feeding system be instated; and school environment should be enriched by the provision of a wide variety of experiences in a way that facilitates the acquiring of knowledge and habits needed for the promotion of health.

Person Motivated for Learning

The conventional notion of education is that education takes place in particular places and in particular times. But this notion has lost legitimacy in the modern society.

The person motivated to learn is accommodative of and open to uncertainty. Confronted with a new problem, he attempts to solve it with the existent knowledge but is flexible enough to pursue alternative solutions when it fails to work out. He does not shy away from problematic situations; rather he faces them squarely with confidence. He continuously assesses the problematic situation, organizes alternative solutions, controls the situation and brings it under his heel. He is not afraid of or discouraged by mistakes. He faces new situations with curiosity, interest, zeal and resilience and positively adapts to it through the change of thinking and behavior.

The person motivated to learn is more concerned with the process than the outcome of learning. He views a proven theory as the provisionally best of all available ones, but subject to change. Therefore, learning is viewed as an ongoing process.

Learning is individualistic but it is done in a group. The outcomes of learning are compared with those of other members in a group and a right one is selected in view of criteria relevant to the group. He shares learning experiences with other members of the group, whereby he gives his experience to and takes experiences from other members. It is in this way that he deepens the reserve of experiences.

2. BASIC DIRECTIONS OF EDUCATIONAL DEVELOPMENT

Education for the Whole Person

Education is often equated with teaching subject matters, but education in its true sense finds its role in providing a sound basis for growth into a whole person. Therefore, teaching subject matters is a means to the development of the qualities that form the ideal profile of an educated person.

The effect of education is manifested in the change of an individual, which is caused through interactions between an aggregation of individuals and the environment. Despite education essentially being a haphazard process, school education is an one-sided imparting of knowledge through the medium of textbooks. The weakness of knowledge-oriented education is that it hampers a balanced development of qualities that shape a right character. Intelligence, aesthetic sensitivity and health, none of these can be neglected in education for the whole person.

Rote learning will disappear from educational scenes, as much of verbalization and memorization will be done by computer. Instead, education will focus on the part of learning which can not be dealt with by computer, namely; high-mental processing skills and character building. It behooves educators and teachers to bear in mind that they should teach something more than subject matters, with primary concern for personal growth in terms of social maturity and character-building.

Upgrading of Education Quality

As education received recognition as a vehicle for upward mobility through the ladder of social hierarchy, its social demand increased markedly. In quantitative terms, educational development in Korea hardly finds its parallel anywhere in the world. But the quality of education has not shown a commensurate improvement. The quality of education depends on the conditions for education, which encompass educational content, teaching method, the quality of teachers, physical facilities, financing, evaluation method, research and development, etc. The school is evaluated in terms of how it creates a balanced assortment of these factors.

Educational content should be reformed in view of new needs. The explosion of new knowledge and information calls for a periodical reform of curriculum based on research findings and field trials. The instructional process should shift from highly labor-intensive, lecture-bound teaching to the use of various methods utilizing media and instructional materials. Learning experience may be diversified by directing greater attention to discussion, group learning and independent study. Teaching method may well be differentiated according to the development stage of learner and individual needs.

Enhancing the quality of education also makes it necessary to reform the teacher training system, enhance socio-economic status of teachers, and improve working conditions. In this connection, evaluation should be reformed, with search for new evaluation tools to assess human growth in terms of human character.

Equal Access to Quality Education

The common notion of equality is associated with economic equality. Gap in access to quality education is as much destructive of the unity of people as economic unequality. Article 29 of the Constitution entitles every member of the society to the right to receive an equal education.

Educational opportunity is open to everyone. In reality, however, equality in access to education is curtailed by entrance examination, disparity in educational content and educational conditions, social status, locality, sex, age, and the ownership of schools. Continuing education beyond elementary education is dependent on the economic ability of parents. Particularly, children from needy families are disadvantaged in continuing education. The program of secondary education is highly tailored to meet the need to entrance examination. The unfair apportionment of educational resources gives rise to regional disparity of education quality notably between urban and rural areas.

Equal access to quality education does not necessarily mean access to the same educational conditions. Educational goals need to be varied according to individual aptitude, value and personality and this can be achieved through the diversification of educational program.

Special programs should be provided for the gifted, the retarded and the physically handicapped children, which require different educational programs.

Equal access to quality education applies not only to school education but to the entire cycle of life-long education, A significant proportion of children from needy families are out of pre-school education. Youth workers are still disadvantaged in access to further schooling. Housewives and aged people remain a dead loss due to the lack of educational opprotunities to channel their potential to productive activities. The education envisioned for the 2000's should be such that makes education reasonably accessible to every one, irrespective of age, sex and social status.

Openness of Educational System

The notion that school education represents the totaling of education is no longer valid. "Educated person" is defined in terms of competency, character and morality, not by the school he has attended. The school is an arbitrary institution evolved for the convenience of providing a systematic education. Primary concern with school education often excludes numerous educational opportunities outside the school, which still retain more educational value in many respects.

The advancement of medical science, together with the improvement of life environment, lengthens the life span of human beings. The accumulation of information and knowledge is accelerated. The amount of knowledge doubled during the period the first century to 1750. But since 1970's, knowledge has doubled every five years. The quantitative expansion of knowledge prompts its qualitative change. All of these new developments require that education continue from cradle to death.

The rapidly advancing stream of technology diversifies educational programs outside the school. Liberated from labor works, man will be able to direct more time and efforts to education for self-growth. The advent of educational technology holds positive implications for meeting this new need.

Article 29 of the Constitution provides legal basis for the development of life-long education. The legal provision of life-long education is considered a gigantic step forward in meeting new educational needs in the 2000's. Education is ubiquitous in time and space. Where learners meet people, willing to teach, education takes place in one form or another. It requires imagination and creativity to give coherence and direction to this haphazard process of education.

Modernization of Educational Environment

The physical condition and psychological milieu of school is a major determinant for the effectiveness and productivity of educational programs. But the inadequacy of educational conditions as seen in most schools hampers the effort to upgrade the quality of education. What is needed is the modernization of educational environment that provides a wide variety of meaningful educational experiences.

Prominent problems associated with educational condition are over-sized school, over-crowded classroom, double-shift system and high teacher-student ratio. The growth of school population outpacing the expansion of physical facilities makes it difficult to try new content and method. Lecture-bound instruction is the dominant scene of instruction in the over-crowded situation with no room for the adoption of individualized instruction. There is no possibility of creating a humane relation between learners and teachers and consequently school environment is increasingly dehumanized.

The first step to be taken to create an adequate educational condition is to reduce the class size so that a sufficient amount of face-to-face interaction may take place in the teaching-learning process. In this connection, efforts should be made to eliminate uneducative elements existing in its environment. Apart from classroom, educational facilities should be diversified to include liberary, student center, accommodation and dining facilities, which promote the welfare of students. The environment outside school should be kept clean of destructive factors.

Effective Development of Human Resources

Education in Korea deserves credit as a major driving force for economic development. The development of human resources is not the role of education alone; The roles of education are more than the development of human resources. But growing competition among nations lends importance to the role of education in developing human resources, particularly high-level manpower.

The shift of industrial structure from labor-intensive to technology-intensive industry is accelerated. Amid the rapidly developing frontiers of science and technology, each country loses no time in sharpening its competitive edge in relation to others. Unless this competition is buttressed by up-to-date science and technology, a nation comes under the dominance of economic powers. Education derives its stern mandate from this reality, that is to produce technical manpower and know-how that leads off the development of industries.

As a means of laying the foundation for producing high level manpower, the basic sciences receive growing recognition at all school levels. Much in order is a continuing stream of research activities to develop teaching staff, to enhance the effectiveness of teaching methods and content and to improve facilities. The effective development of human resource requires that school be linked to industry in a complementary relation. The need is heightening to provide vocational education at an earlier stage of development.

The growing sophistication of industrial structure and the continual advancement of technology heighten the importance of enlarging opportunities for in-service training. The diversification of educational programs serves this purpose; evening class, vocation program, correspondence course, etc., await to be developed for the workers who are not able to continue formal schooling.

Autonomy and Professionality in Educational Administration

Autonomy and professionality are the long-cherished goals to be achieved for educational administration. Autonomy relates to the participatory process of making decisions regarding important educational issues. Professionality means a high degree of understanding of educational matters and the competency to deal with them on the part of educational administrators.

Education should be offered on stern ethical norms. Education is a human effort to cause behavioral changes in a person but it should be provided with due respect for the sanction and the right of a learner to express his ideas. Educational functions are diversified in the complex, modern society. In order for an educational system to serve a wide variety of functions, administrators should be equipped with professional competency as needed by the unique nature of educational policy.

Autonomy and professionality are two guiding principles to be sought by educational administration. The process of decision-making should be such that reflects the opinions of concerned people within the framework of professional expertises.

The meaning of autonomy is highly connotative, referring to the relative weakening of central administration, reinforcement of local governments, realization of local parliamentary system, principal-centered administration, elitizing of administrators and efficient personnel management. The realization of educational autonomy is facilitated by a balanced implementation of these dimensions. It is a way to secure the neutrality of educational administration free of political and interest groups and to effect educational development in a long-term perspective.

3. QUANTITATIVE INDICES OF EDUCATIONAL DEVELOPMENT

The quantitative indices that guide the development process of education are divided up into educational opportunities, educational conditions and investment. Educational opportunities are expressed in terms of enrollment and educational conditions represented by the number of pupils per class and the student-teacher ratio. Investment represents the budget requirement to support educational development along the indices of the two areas.

These indices were projected on the basis of the respective trends over 40 years in Korea and in comparison with international standards. They were adjusted realistically through computer simulation, taking into account budget constraints and other factors expected to exert a significant impact.

Change of the School-Aged Population

Based on the year of 1983, total population will show a 1.26 fold increase over the present level by 2001. Conversely, the school population aged from 6 to 21 will decline by 0.02 percent during this period. By school level, the populations of kindergartens and primary/high school will show 1.06 and 1.01 fold increases respectively, whereas those of middle school and higher education will decline by 0.06 and

Table I-9

Change of School-Aged Population

in 1,000 persons

School Level	1983	1986	1991	1996	2001
Kindergarten (4-5)	1,596(1.00)	1,661(1.04)	1,762(1.10)	1,709(1.07)	1,688(1.06)
Primary School (6-11)	5,065(1.00)	4,815(0.95)	5,108(1.01)	5,235(1.03)	5,115(1.01)
Middle School (12-14)	2,798(1.00)	2,687(0.96)	2,358(0.84)	2,556(0.91)	2,616(0.94)
High School (15-17)	2,594(1.00)	2,791(1.08)	2,453(0.95)	2,474(0.95)	2,613(1.01)
Col. & Univ. (18-21)	3,583(1.00)	3,454(0.96)	3,678(1.03)	3,123(0.87)	3,341(0.93)
Primary to College (6-21)	14,040(1.00)	13,747(0.98)	13,597(0.97)	13,388(0.95)	13,685(0.98)
Total	39,970(1.00)	41,877(1.05)	44,894(1.12)	47,680(1.19)	50,183(1.26)

Note : Figures in parantheses are increasing rates.

0.07 percents respectively (see Table I-9). The average reduction of school population will facilitate the improvement of educational conditions.

Indicators of the Expansion of Educational Opportunities

While total school population does not increase noticeably, enrollment and entrance ratios will increase considerably. As noticed in Table I-10, 98.4 percent of children finishing primary schools advance to middle schools in 1983. This entrance ratio will reach 100 percent in 1991, the ending year of the plan to extend compulsory education to middle school. The entrance ratio to high schools will rise from 88.5 percent in 1983 to 95.5 percent in 2001. Entrance ratio to colleges and universities will rise from 61.1 percent to 68.6 percent during the same period.

Table I-10
Entrance Ratios

(%)

School Level	1983	1986	1991	1996	2001
Primary school – Middle school	98.4	99.0	100.0	100.0	100.0
Middle school – High school	88.5	89.6	91.6	93.6	95.5
High school – Col. & Univ.	61.1	55.9	57.9	70.2	68.6

Enrollment by school level was projected on the basis of entrance ratios and regression rate of each school level averaged from the data of the past six years. The basic premise was that all of children aged six enter primary schools. To guide the expansion of opportunities for pre-school education, the enrollment in kindergarten targeted for 2001 was set at 53.8 percent in comparison with 12.9 percent in 1983. Including nursery schools, total enrollment in pre-school education will increase from 22.4 percent in 1983 to 75.0 percent in 2001. During this period, enrollment will rise from 95.5 percent to 96.2 percent in middle schools, from 77.6 percent to 86.8 percent in high schools and from 27.9 percent to 47.3 percent in higher education.

Table I-11
Enrollment Ratios

(%)

School Level	1983	1986	1991	1996	2001
Pre-school education (1)	12.9	19.9	31.2	42.5	53.8
Pre-school education (2)	22.4	31.2	45.8	60.4	75.0
Primary school	103.8	99.9	98.1	98.1	98.0
Middle school	95.5	102.4	95.1	96.2	96.2
Higher school	77.6	80.9	88.3	85.0	86.8
College & Univ.	27.9	35.1	37.0	45.5	47.3

Notes : Pre-school Education (1) : Kindergartens alone
Pre-school Education (2) : Including child care centers

Based on the year 1983, total number of students will show 1.12-fold increase by 2001. But the growth rate varies with school level. Most rapid increase is shown for special schools (7.10-fold), followed by kindergartens (4.40-fold), graduate schools (3.06-fold), universities (1.58-fold), and high school (1.13-fold). It is in the primary and middle schools that student population will decline slightly.

Indicators of Improvement in Class Size

In comparison with the educational conditions of other countries, it is readily noticed that the classroom situation of Korea has reached a serious dimension, detrimental to the quality of education.

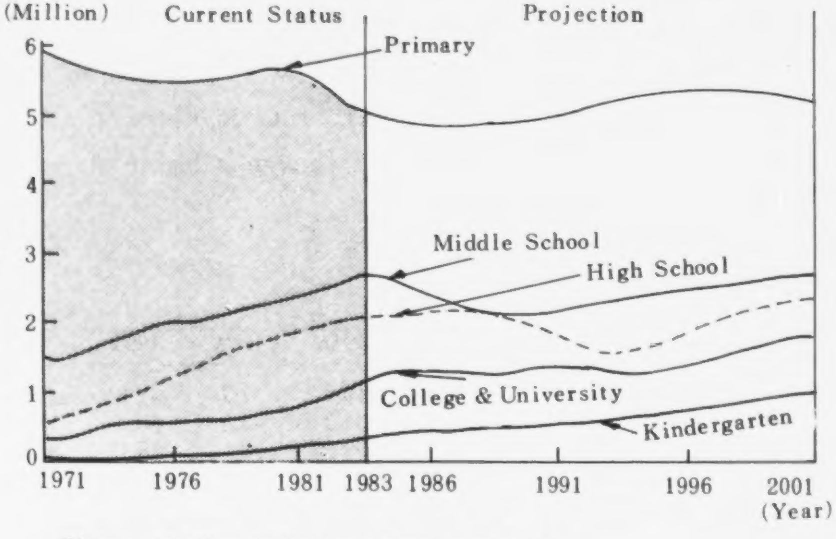

Diagram I-2 Changing Pattern of Student Population

Table I-12
Projected Number of Students

(in 1,000 persons)

School Level	1983	1986	1991	1996	2001
Kindergartens	206.4	330.8	549.9	726.5	908.8
Primary School	5,257.2	4,812.6	5,011.0	5,132.5	5,014.6
Middle School	2,672.3	2,753.0	2,243.3	2,458.3	2,515.9
High School	2,013.0	2,258.0	2,165.2	2,103.4	2,266.7
Col. & Univ.	1,001.1	1,212.3	1,361.7	1,421.1	1,579.4
Graduate School	60.3	98.0	122.8	151.5	184.5
Special School	11.4	24.4	42.1	62.3	80.9
Total	11,221.7	11,489.0	11,496.0	12,055.6	12,550.8

The number of pupils per class in 1983 averaged 35 in kindergartens, 47 in primary school, 64 in middle schools, 58 in high school and 13 in special schools. By 2001, they will diminish to 15, 33, 38, 35 and 9 respectively (see Table I-13). To realize these indicators, the numbers of classrooms should increase by 10.27, 1.36, 1.60, 1.87 and 9.78 times respectively (see Table I-14).

Table I-13
Number of Students per Class

(in person)

School Level	1983	1986	1991	1996	2001
Kindergartens	34.9	33.7	27.5	21.2	15.0
Primary School	46.9	42.0	40.1	37.1	33.0
Middle School	63.9	60.2	42.6	40.9	37.6
High School	58.1	56.2	45.2	37.8	35.0
Special School	13.3	13.7	12.3	10.8	9.2

Table I-14
Projected Number of Classrooms by School Level

(in 1,000 classrooms)

School Level	1983	1986	1991	1996	2001
Kindergartens	5.91(1.00)	9.82(1.66)	20.03(3.39)	34.23(5.80)	60.59(10.27)
Primary School	112.12(1.00)	114.62(1.02)	124.96(1.12)	138.32(1.23)	151.94(1.36)
Middle School	41.85(1.00)	45.77(1.09)	52.71(1.26)	60.08(1.43)	66.97(1.60)
High School	34.67(1.00)	40.17(1.16)	47.92(1.38)	55.72(1.61)	64.76(1.87)
Special School	0.86(1.00)	1.79(2.00)	3.43(3.78)	5.78(6.44)	8.76(9.78)

Figures in parantheses are increasing rates.

Along the increasing trend of classrooms, Table I-14 shows the indicators which guide the piecemeal increase in the number of schools. The number of classrooms in public kindergartens, which averaged one in 1983, will rise to two by 2001. In private kindergartens, the number will rise from 2 in 1983 to 4 in 2001. In the case of primary school, the number of new schools is projected on the premise that each new school is composed of 36 classes. The premise for middle school is that 80 percent of new classrooms in public schools and 60 percent in schools accommodated by new middle schools, each composed of 18 classrooms, with the remaining incorporated into the existent schools. The same percents of new classroom will be accommodated in new high schools, each composed of 24 classrooms (Table 1-15).

Table I-15
Projected Number of Schools by School Level

School Level	1983	1986	1991	1996	2001
Kindergartens	4,280	5,730	8,910	12,570	18,930
Primary School	6,500	6,740	7,180	7,670	8,150
Middle School	2,250	2,430	2,760	3,080	3,400
High School	1,490	1,690	1,970	2,260	2,600
Special School	70	110	190	290	420

As noticed in Table I-16, the number of pupils per teacher averaged 32 in kindergartens, 42 in primary schools, 42 in middle schools, 32 in high schools, 34 in the universities and 10 in special schools in 1983. These will be down to 12, 30, 23, 19, 20 and 6 respectively. Given this projection, the demand for teachers will show a steady increase (see Table I-17).

Table I-16
Number of Pupils per Teacher

(in person)

School Level	1983	1986	1991	1996	2001
Kindergarten	32.2	23.0	18.0	14.9	12.0
Primary School	41.7	36.8	35.8	33.8	30.0
Middle School	42.2	37.8	28.2	26.1	23.3
High School	31.9	30.1	23.5	19.8	18.8
Col. & Univ.	34.1	33.1	28.7	24.3	19.7
Special School	9.8	9.7	8.2	6.9	5.6

Table I-17
Projected Number of Teachers by School Level

(in person)

School Level	1983	1986	1991	1996	2001
Kindergarten	6,420	14,400	30,520	48,720	75,740
Primary School	126,160	130,950	139.970	151,800	167,150
Middle School	63,350	72,750	79,610	94,210	107,940
High School	63,110	75,060	91,970	106,260	120,490
Col. & Univ.	29,710	37,160	48,090	59,470	81,310
Special School	1,170	2,520	5,110	9.080	14,450

Indicators of Investment in Education

Along with the expansion of educational opportunities and the improvement of educational conditions, there must be the upgrading of education quality, scientific and technological innovations, the development of human resources, the professionalization of educational administration and research & development, all of them requiring a dramatic increase in educational budget.

The percentage of total public cost of education to GNP should rise from 6.9 percent in 1983 to 7.1 percent in 2001. The government share of total education cost to GNP should rise from 3.8 percent in 1983 to 4.6 percent in 2001 to reduce the share of parents (see Table I-18).

Table I-18
Investment Indices

(%)

Classification	1983	1986	1991	1996	2001
Percentage of Public ed. Cost to GNP	6.9	7.4	7.3	7.0	7.1
Percentage of MOE Budget to GNP	3.8	3.9	4.2	4.4	4.6
Percentage of Parent Burden to Public ed. Cost	45.5	43.9	37.5	30.5	25.3
Public ed. Cost per WPU ($)	244.0	319.8	483.9	655.1	836.6
Percentage of Public Ed. Cost per WPU to Capital Income	13.2	15.9	19.0	19.3	20.0

Note : WPU : Weighted Pupil Unit

2

PROSPECTS FOR EDUCATIONAL DEVELOPMENT AND POLICY TASKS

I

REALIZATION OF HUMANISTIC EDUCATION

With the continuation of urbanization and industrialization, the future society will become complicated with new problems to bring ethical norms to a chaotic situation. Social environment will see humanity thinning out and human behaviors increasingly controlled by the ruthless objectivity of sciences. This gives us a mandate that school education should be centered around learners, with guidance to be strengthened to develop a human relation where teachers and learners feel the warmth of heart.

Education will shift from the traditional role of imparting knowledge to providing a wide variety of experiences to instill humane character. Learning experiences should be organized to develop the consciousness of moral principles needed to live in the rapid torrent of changes. Equally important is to secure teachers of high quality and to develop instructional materials relevant to new learning experiences.

This chater, composed of two sections Education for Whole Person and Development of National Characters, explains tasks to redirect educational activities toward the restoration of humanity.

1. EDUCATION FOR WHOLE PERSON

Prospects

Dehumanizing Trend in Industrialized Society

The industrialized society necessitates a new human character different from what we have known of. It holds the potential to create a tendency to prise material rather than spiritual value and to belittle humanity amid primary concern for industrial development. It is for this vein that human character may reflect market orientation. Individuality tends to be equate with a commonalty; the sense of identity is very much related to "how much oneself appeals to others." The prevalence of this new self-concept invites a new tendency to increase the feeling of estrangement among people. A dramatic illustration of this trend is the advent of new words, "lonely crowd," "estranged people," "invalid human race," etc. Automation and material affluence enabled us to enjoy all the blessings of modern life. At the same time, they made us feel the emptiness of being.

Korean industries have made giant strides since the early 1960's and this trend will continue at an accerlerated speed as we approach the 2000's. Approaching the advanced stage of development, we are reminded of what problems are coming upon in the future in view of the experiences of advanced countries. They are human problems to be prevented by educational measures. There is a stern mandate that education should orient its role to address the human problems coming from the feeling of alienation and dehumanization.

Increased Control of Science of Human Beings

Knowledge and skills to control human behaviors have developed to an astounding stage. Behavioral science, being of recent origin, has not engaged the attention of lay people obsessed with new wonders of technology. In actuality, this discipline is stamping its feet for recognition of its growing contribution to the possibility of controlling behaviors which had been considered "untouchable." It will be credited with new discoveries useful to manipulate mind and behaviors for various purposes. The people to benefit from the theories of behavioral science are social idealists, psychologists, political demagogues, advertisers and others.

One of crucially important tasks facing us today is to seek answer to "what are the ideal forms of human beings and how to attain them?" This question is essentially related to human relation and ethical norms. Since education is concerned with what an educated person should be like in the future, it aims at equipping youngsters with ability to adapt to changing situation with an accurate understanding of the contemporary environment. In view of the future to see human race under scientific manipulation, the role of education will be stressed as the guardian to protect human beings from the ruthless onslaught of sciences.

Criticism of School Education

Today's schools defy the expectations of people by being rigid and tradition-bound. The school is expected to play vital role in restoring humanity but it is still obsessed with the peripheral concern of imparting knowledge in preparation for entrance examination. It is well known that the school is not suitable as a place for children to live in. It is the social and psychological climate of school that dehumanizes educational process. Grading a learner relative to others intensifies competition, which in turn gives rise to animosity against teacher and classmates, misgiving and mental stress on the part of children, with the resultant effect of developing pliability, obedience and aversion to learning. Studies indicated that juvenile crime has much to do with school life. With the schools having much to be blamed for, the restoration of humanity is a distant outcry.

Policy Tasks

Student-centered Education

The raison d'être for school lies in helping students. The school exists for students, as administrative authorities exist for schools. Students are the central focus of all educational activities. Defying this principle, educational planning is made on a highly abstract level aloof from practical needs and the effectiveness of educational administration is measured by convenience. The result is the tendency for students to adapt to school, and not vice versa. It is something like putting cart before horse. Developing a new operational system that caters the thrust of educational activities to the needs of students is a vital necessity. It is not that students are moulded into programs but the reverse is the fact. Educational goals and methods are not imposed from above but the result developing out of the interest, aptitudes and needs of students. The validity of school facilities, curriculum and operational system is measured by the degree of satisfaction of students with school life. Therefore, school should be a place pleasant for students to stay in. Physical facilities, as they stand today, leave little to improve in water supply, heating, lighting, sanitation and recreation. But they are far from what is required to facilitate growth into whole person in terms of psychological effect. Resort to repressive acts, control and threat to corporal punishment should be kept to minimum, whereas reliance is placed on ways to encourage participation in learning based on interest and motivation. The school is responsible to build a climate where students feel the warmth of human heart.

Guidance for Human Relation

The rapid change of society makes it difficult for its members to adapt to new situations. Especially students, being in the formative stage experience tremendous difficulties to adapt to fast changing environment. The uncertainty and unpredictability of future poses a threat to them. They agonize over schooling and career choice about which they need to be helped by professionals to make rational and informed decisions. Counseling has developed in relation to guidance service for students. The importance of guidance has recently received new attention, but it still has a long way to develop into a fulfledged stature serving the true needs of students. Problems over which students agonize have not been clearly identified. Neither have the personality characteristics of people needed for the future society been clearly defined enough to provide clue as to how to approach them. Accurate understanding of these is key to determine the quality of guidance. It is urgent that guidance and counseling be built into school education.

Counseling should be directed toward encouraging appreciation, to the fullest measure, of human relation with others, because human problems are traceable to estrangement from human relation. There is a growing tendency to hide intentions and feelings behind the facade of kindness and honesty. The duality feeds on the social climate of mutual distrust, and the school climate, marked by "over-sized" and "crowded" situation, is an additional spur to duality gaining force. This situation, coupled with the heavy workload of teachers, simply widens the distance between a teacher and students, with their relation being deprived of intimate contacts. Above all, human-relation constitutes a new dimension of education to be emphasized. Human relation is made possible by respect for and understanding of and reconciliation with others. When this climate is built into school, every member of school becomes an agent for the personal growth of others.

Educational Environment for Growth into Whole Person

The growth into a whole person means that all different abilities are developed in an organic relation to form an integrated whole. It is essential that an educational environment be created to support the development of these abilities. Knowledge-centered education is heavily dependent on subject matters which are arbitrarily compartmentalized, the treatment of which focuses on particular subjects out of proportion to others. With primary concern for the imparting of knowledge related to subject matters, character formation and other concerns were virtually overlooked.

Subject matters should be integrated to provide meaningful learning experiences with ample room for the inclusion of experiences leading to character formation. Instruction heavily reliant on textbook and the blackboard should be modified by expanding opportunities for extracurricular activities, field survey, camping, service for community, self-governing activities, etc. There is a need to ensure a balanced treatment of cognitive, social, aesthetic and affective experiences.

Learners have a wide range of different abilities, interests, attitudes and values. In practice, instruction is standardized for average learners, with those outside this category unattended at all. Ironically, it is learners themselves who adapt their learning to the convenience of instruction. School should offer a wide range of choices in learning experiences accommodative of different needs of learners. It is also necessary to institutionalize early graduation and special classes, with multiple instructional materials available to serve the different needs of learners.

Development of New Evaluation System

The reason that education for whole person is given tokenism treatment in school despite the rhetorics given is that evaluation has been concerned with limited aspects of student achievement which are measurable. The limited scope of evaluation has been the reality of school education so long that evaluation of this kind is still mistaken for representing what evaluation is all about. Other aspects which defy measurement were dismissed as "untouchable." In order for education for whole person to find a smooth way into school education, evaluation should make a dramatic departure from what it has been and divergent evaluation tools need to be developed.

Evaluation should not be limited to the learning activities of students but should be extended to extracurricular activities, school operation and environmental factors. The practice of blaming learners for their failure to achieve learning objectives should be done away. Instead efforts should be made to develop recognition that holds the school in its totality responsible for it. Self-evaluation is a vital necessity for self-renewal. Life goals set for oneself reflect the uniqueness of one's ability, aptitude, interest and value. It is crucially important to develop the habit of setting goals and evaluating oneself in terms of progress toward goal.

2. DEVELOPMENT OF NATIONAL CHARACTERS

Prospects

South–North Confrontation and Its Implication

The ideological foundation of Korea, doubtlessly, is democracy. The realization of democracy is not possible through institutionalization alone; it requires that every citizen be equipped with necessary characters that harmonize with its principles. Uniquely, Korea still remains divided and there is the potential to ignite south-north confrontation which works against the realization of democracy.

This unique situation gives us a mandate that Korea present a model case illustrating the superiority of democracy over communism. Koreans should have a firm belief in democracy as the ideal modality which ensures survival in this turbulent world threatened by communism and the resolute to win over communism. Anticommunism, among others, is the spiritual posture to be taken by Koreans.

Koreans, more than other peoples, should develop a critical thinking about communism, an ability to see through the screen of political propaganda, the true substance of it and how it is different from democracy in approach to realize human ideals. As dialogue is gaining momentum between south and north, we are driven into the future of uncertainty. Conscious adaptation to new situations requires that Koreans consolidate their anti-communism posture with the firm belief in democracy.

Growing International Competition

International competition will be intensified, as we approach the 2000's, particularly in political and economic spheres. This will give urgency to the necessity of improving the competitiveness of Korea in the international arena. The growing international competition is the direct outgrowth of the country open to other countries. These two prominent trends may work for or against the country like Korea, which is in the process of rapid transformation. 'Open-door policy' commends itself for igniting the fuse for a massive influx of up-to-date technologies. On the other hand, it exposes the unfledgling nation to a new wave of economic and cultural imperialism. Amid the unceasing stampede of new things from outside, it is vitally necessary to develop the sense of subjective identity and of pride in cultural heritage. Without this, people may be led to idealistic cosmopolitanism without cultural root. People should be cosmopolitanized without being too chauvinistic.

Individuality in the Complication of Society

Industrialization and urbanization causes the society to be increasingly complicated. As society grows in complexity, the existent value system faces new challenges to negate its validity, and there ensures value conflict and the disintegration of value system, if the value conflict is allowed to drift into extremity. Ethical norms will be jeopardized and the social order will be brought into chaos, blurring distinction between the right and the wrong.

In the wake of rapid industrialization, Korean society is shaken to the root with individual and social ethics being on the brink of disintegration. Juvenile crimes are increasing. A new ethical order must be established. At the earlier stage of industrialization, there is a tendency that individual benefit takes precedence over the greater good of society and it is in this context that the individual consciousness of social order is lost. It is taken for granted that seeking individual goal necessarily entails harms to others. The ethical crisis is disruptive of the unity of people and weakens the strength of nation. Social solidarity rests upon the awareness of people of social bond - that individual gains are secured by respecting other's right to pursue theirs.

Policy Tasks

Establishing New Profile of Koreans

Establishing a new profile of Koreans leads to enhancing the image of Koreans, as recognized by other peoples. The heightened image of Koreans is the source of pride for Koreans. Given the clearly defined profile, children are temped to identify themselves with it. Recognition by foreigners of Koreans in a new light is a key factor to shape their attitude toward Koreans.

But the new profile of Koreans can not be created overnight. Neither is it determined by a few people. It is the product of evolution throughout the entire period of history. Although being the product of evolution, it remains undefined unless an effort is made to give it a concrete form. Having defined it in a concrete form, it is necessary to reiterate it to bring home to all peoples so that they are tempted to emulate it.

To establish a new profile of Koreans requires a systematic study to be conducted in depth, due to the mandate of discovering common characteristics of Koreans from historical facts and weaving them into an ideality to be realized. As the people blessed by racial and cultural homogeneity Koreans have not lost sight of their legitimate identity, while surviving numerous foreign incursions. There is hardly any parallel to Korean people in terms of resilience. Ideological confrontation led to the fratricidal war that reduced Korea into utter waste. Never disappointed by numerous tragical events, however, Koreans have fulfilled their commitment to the cause of national development. Koreans have shown indomitable will to tide over national tribulations, coming from its unique location geopolitical importance and ideological confrontation. The study related to the profile of Koreans should be conducted in the context of historical facts, with the participation of scholars representing the widest possible range of disciplines.

New Moral Education

Moral education is offered on each school level with a view to helping children to nurture a good character. But the moral education, as it stands today, gives central focus to a few selected virtues as if they formed a character of high moral standard. It has something to commend itself for by reviving the internalization of the virtues which are the meritorious points of traditional ethical norms. Its weakness lies in the lack of relevance to the modern society of new dynamism, which requires self-reasoning ability combined with motivation for continual self-renewal. Teaching method calls for a significant departure from the conventional one, which is open-ended and centered around learners.

The moral virtues in the feudalistic society have the connotation of "closedness," because they were not the subject of open discussion. They were accepted with an absolute obedience. Living in a society of new dynamism, people don't allow themselves to be talked into accepting a fixed set of moral virtues. People can not be blamed for having different moral virtues. Neither is it desirable to contain people within the bound of a few selected virtues. What is urgently needed is to reform the curriculum of moral education in a way that places emphasis on the open process of instruction and develops a new morality relevant to the modern society of new dynamism.

Study on National Spiritual Education

The national spiritual education is the major thrust of educational activities to develop the desirable character of Koreans. In substance, it comprises (1) developing the consciousness of nationhood, anti-communism and national security to rally people around the ideological stance of the nation, (2) establishing a new economic order by teaching economic knowledge, economic ethics and healthy economic life, and (3) encouraging the internalization of democratic life. Spiritual education essentially deals with normative values, which have much bearings on ways of thinking, value judgement and behavioral patterns.

Normative values breakdown into national ethics, social ethics, and individual ethics. The national spiritual education focuses on national ethics but not to the virtual exclusion of social and individual ethics. The proportion of these three treatments constitutes an area of in-depth inquiry.

Textbooks, guide books and reading materials related to spiritual education abound, and their contents are widely divergent. But it is not necessary to standardize the materials. Acutely needed are the guidelines including the clearly defined goals, contents to be treated, structure, and notes for compilation and editing. The way in which spiritual education is offered leaves much to be desired, notably in terms of linkage between school education and social education. Spiritual education outside school hardly gives a systematic treatment of contents among different organizations. Mass media launches educational programs on a scatter-shot basis without coordination among them. Educational programs are offered without regard for their relevance to the target audience. The problem is compounded by the difficulty of securing qualified teachers. Since spiritual education sits astride myriads of different organizations, the task of coordinating among them becomes a matter of priority attention. This requires an unceasing stream of studies to be conducted with regards to all aspects of spiritual education.

Systematic Institutionalization of Spiritual Education

The importance of spiritual education is highlighted in view of its relation to the necessity of achieving national unification. The implementation of spiritual education on a scatter-shot basis defies what it seeks to achieve, that is, to develop the necessary consciousness of youngsters who will bear the major brunt of national unification in the future.

Education in preparation for national unification should not be confined to a study of communism in theory and practice. Going one step further, efforts should be made to develop a firm belief in the legitimacy and superiority of democracy, the sense of subjective identity and pride in cultural heritage, the will to achieve national unification, a better understanding of reality and problems in relation to the ideal, and resolute to solve them.

Spiritual education viewed in a board context necessitates the establishment of institutional base, if it is to be offered in a systematic fashion. The first step to be taken is to develop a training system for teachers to be exclusively responsible for national spiritual education. It entails the task of securing key trainers and reforming teaching methods. Since spiritual education goes beyond the purview of school education, linkage with social organization constitutes an area of in-depth inquiry. In view of the necessity of establishing a theoretical base for national unification, the institutional realignment should parallel theoretical studies. Concomittently, studies should be conducted with regard to curriculum, instructional materials, teaching method and teacher training system.

II

REALIZATION OF EQUALITY IN EDUCATION

Education, among others, is the most decisive factor in employment, promotion, marriage and other aspects of social life. In the society which attaches prominent value to education level, the primary concern is with the assurance of fairness in the distribution of educational opportunities, which is manifested in terms of equal access to quality education. The demand for equality calls for the elimination of gaps in educational facilities and teacher quality between urban and rural sectors. It also argues for the establishment of special schools for the physically or mentally handicapped children and gifted children.

The ways to eliminate inequality in educational opportunity are found in support for educational expenditure and the reform of screening system. To do away with gap in educational quality, supplementary education should be institutionalized as the initial step to equalize schools. For the promotion of special education, necessary external facilities and lab equipment should be secured, relevant programs developed and teacher training realized.

This chapter discusses the prospects and policy tasks of dealing equality in education in reference to inequal access to education and special education.

1. REALIZATION OF EQUALITY IN EDUCATIONAL OPPORTUNITY

Prospects

Symbolic Value of Education

The recognition that education is the most potent factor to determine the socio-economic status of people is prevalent in Korean society. The symbolic value of education represented by the highest level of school that people have gone to is the major consideration in employment, promotion, assignment to duties, and earnings. Table II-1 illustrates how much decisive education level is in determining earnings. Basing the 1982's earning of a middle school graduate on 100.0 the earning of a high school graduate is estimated at 135.1 and, that of a junior college graduate at 188.3 and that of a college graduate at 287.8. As such, education level accounts for wide gaps in earnings. Meriting our special attention is the gap between those below high school and college graduates; those with 12 years of schooling earn less than half the earning of those schooled for 16 years. The income gap between these two groups widens in the 1980's. In 1971, the high school graduates earned 57 percent of the earning of college graduates and this proportion wasdown to 47 percent in 1982. This gap is in a way indicative of the tendency to prize the symbolic value of education.

Comparing school levels in terms of rate of return, colleges and universities are most cost-effective. As shown in Table II-2, the rate of return to middle school is 2.8 percent, as compared with 9.9 percent to high school and 13.8 percent to college in 1977. A study conducted in 1971 showed the rate of return being highest on the high school level. A study conducted before 1971 showed the rate of return being highest on the middle level. A recent study conducted in 1983 showed the higher rate of return to college. Since rates of return to schooling may vary with the sampling method of study, the results of study presented here can be misleading. Despite the doubtful validity of study results, it is worthwhile to notice that the highest rate of return to schooling moves toward higher education with the passage of time. The social and economic value of schooling is remarkable and that of higher education in particular is unproportionately high. This tendency will continue to dominate the social climate of Korea unless special efforts are made to reverse it within educational sector or by employers.

Table II–1
Earnings Differentiated by Education Level

Classification	1971	1975	1979	1982
After primary school				
Income	15,106	29,234	96,939	–
Indices(%)	83.1	84.3	88.9	–
After middle school	18,168	34,666	109,043	156,258
Income	18,168	34,666	109,043	156,258
Indices(%)	100.0	100.0	100.0	100.0
After high school				
Income	27,004	55,982	157,790	211,043
Indices(%)	148.6	161.5	144.7	135.1
After jr. college				
Income	–	57,554	232,884	294,190
Indices(%)	–	166.0	213.6	188.3
After college				
Income	47,309	120,021	364,010	449,765
Indices(%)	260.4	346.2	333.8	287.8

Source : Income Survey Report by Ministry of Labor Affairs, 1971-82.

Table II–2
Rates of Return to Schooling

School Level	1967[1]	1969[2]	1969[3]	1971[4]	1977[5]	1983[6]
Middle School	12.0	20.0	1.0	0.2	2.8	9.5
Higher School	9.0	11.0	15.0	14.6	9.9	12.3
Colleges and Universities	5.0	9.5	8.5	9.3	13.8	13.0

Notes :
1) Kwang Suk Kim, *Rates of Return on Education in Korea* (unpublished), 1968.
2) Robert M. Morgan (ed), *Systems Analysis for Educational Change: The Republic of Korea*, Florida State University, 1971.
3) Koh Johoon et al '"*Study on the Projection of Effect of Investment in Manpower Development, Korea Development Institute*, 1971.
4) Chang Young Jeong, *Rates of Return on Investment on Education: The Case of Korea*, KDI, 1974.
5) Bae Chong Keun, *Study on Optimal Investment in Education and Its Economic Effect*, 1978.
6) Korean Educational Development Institute, *Analysis of Educational Contribution to Economic Development*, 1983.

Ascriptive Status and Education Level

In the society based on meritocracy, fairness in the distribution of educational opportunities is a central concern. The fairness rests upon the degree of dependency on meritocracy, but the distribution of educational opportunities is not always based on meritocracy. Ascriptive status proves to be an important determinant for education level, particularly in higher education.

The occupation of parents appears to be an important factor for advance to college or university. Gap in the opportunity for higher education is also noticed between urban and rural sectors. The income level of parents is another important variable. Table II-3 reflects an attempt to relate the income level of parents to the opportunity for higher education.

Among the households whose incomes range from 30,000 won to

Table II–3
Relationship between Income Level and Enrollment in Higher Education

Classification	0	Less than 300,000 Won	30,000– 60,000 Won	60,000– 100,000 Won	100,000– 150,000 Won	More than 150,000 Won	Total
National							
Household	6,084	301,610	578,098	279,399	91,744	49,955	1,306,890
Students	796	4,879	28,538	30,977	22,391	20,896	108,477
%	13.1	1.6	4.9	11.1	24.4	41.8	8.3
Urban							
Household	4,917	99,097	288,013	161,107	62,149	37,450	652,693
Students	796	3,272	25,085	27,877	21,037	20,004	98,071
%	16.2	3.3	8.7	47.3	33.8	53.5	15.0
Rural							
Household	1,167	202,513	290,085	118,292	29,595	12,545	654,197
Students	0	1,607	3,453	3,100	1,354	892	10,406
%	0.0	0.8	1.2	2.6	4.6	7.1	1.6

Note : The household represents the number of houses with children aged 18-21.

Source : Bae, Mu-Ki "Educational Investment and Income Distribution", *Income Distribution and Determinants in Korea*, Korea Development Institute, 1979, p.372.

60,000 won per month, 4.9 percent of the collegeaged population are enrolled. By contrast, the families which earn more than 150,000 won show 41.8 percent enrolled. The households which earn less than 60,000 won account for 75 percent of total, while their enrollment account for 6.5 percent. This fact indicates that economic reason is an important factor to continue higher education. Another indicator to draw our attention is the difference in enrollment between urban and rural sectors. Even within the same bracket of income, higher enrollment ratio is noticed in urban sector. Those from rural sector are disadvantaged to go to college due to additional burdens of financing room and board. It is safe to say that there are other factors than economic reason to work against advance to college in rural areas.

A recently conducted study revealed that ability and ascriptive factors had equal impact on the opportunity to continue higher education and that the latter exerted greater impact with the passage of time. This trend will continue with more prominence unless special policy measures are taken.

Policy Tasks

Support for Educational Expenditure

The expenditure on higher education is borne by its beneficiaries. This principle also applies to the secondary school in Korea. Therefore, the financial burden imposed on students is in a greater proportion in Korea than any other countries. Table II-4 compares the private shares of educational expenditure between Korea and Japan. In the

Table II-4
Private Shares of Educational Expenditures by School Level

School level	Direct cost (A)	Private share (B)	B/A (%)	Japan (1981)
Kindergarten	42,606	31,043	72.86	49.02
Primary Sch.	1,898,463	730,984	38.50	0.85
Middle Sch.	967,837	821,670	84.90	
High Sch.	1,072,894	910,309	84.85	19.20
Jr. college	292,739	232,160	79.31	28.94
Teacher's col.	27,891	9,615	34.47	
Col. & Univ.	1,334,539	1,000,715	74.98	
Total	5,639,969	3,736,496	66.25	12.50

Source : 1) Young Chul Kim, et al. *Educational Investment Scale and Optimum Unit Cost of Education*, 1982.
2) Japanese Ministry of Education, *Statistical Bulletin of Education*, 1983.

case of higher education, the private share of educational expenditure in Korea more than doubles that of Japan. The recent increase in the tuition fee of national universities in Korea is expected to widen the gap further.

Scholarship for needy students will be a key to the solution of the problem coming from the excessive burden of beneficiaries. But the number of scholarship recipients is still minimal. Since the criteria for scholarship granting are student achievement and financial status, the former often takes precedence over the latter. The scholarship will have a limited effect in terms of its contribution to the equalization of educational opportunity. It is urgently needed to institutionalize support for needy students. The creation of "education support fund" will provide a shot in the arm for those who have to give up schooling for economic reasons. Since the traditional notion of financial aids is related to tuition, it takes the form of tuition exemption or subsidy which covers part of tuition. Financial aids should cover beyond tuition to include monthly stipend. When financial aids system is institutionalized in a broad connotation, the present scholarship system may well be integrated thereto.

Open School

Financial aid is not enough to ensure equality in educational opportunity. Attention needs to be directed to those who are handicapped in access to education due to employment or obligation to earn for the family. There are physically handicapped children who have not been mainstreamed into regular schools. To ensure them of equal access to education, financial aids should be accompanied by making schools open to them.

Educational opportunity has been diversified by the inauguration of air and correspondence high schools, Air and Correspondence

University, industry-affiliated programs, open universities and so forth. These are a significant departure from formal schools in that they are easily accessible by the people who were denied equal access to formal education in the past. Shifting away from formal schools, more resources should be devoted to the expansion of nonformal education facilities, while improving the quality of their educational programs. In due course of time, consideration should be given to the creation of master degree programs in the Air and Correspondence University. The regional distribution of open universities should be balanced.

For the physically handicapped children, special schools should increase in number. Regular schools should be adequately equipped with facilities for special education with teachers of professional capacity responsible for it.

Eligibility for Admission

Determining eligibility for admission is based on student achievement in subject matters. For the admission to university, the score of the National Scholarstic Achievement Examination for College Entrance is taken into account, together with student achievement made in high school. But the National Scholastic Achievement Examination results, alone can not become the valid indicator of eligibility for university education. It appears that student achievement in subject matters is the result of comprehensive learning experiences and activities by individual learners. Many of empirical studies point to the finding that student achievement largely varies with the cultural backgrounds of learners. Taking this findings into account, the present screening system leaves much to be desired. It is a global tendency to diversify selection criteria in a way that reduces sole reliance on subject matters. In the United States, candidates for university education are selected on the basis of student achievement in high school, aptitude test and recommendations. Admission quota for black minority are set so that competition among themselves winnow them to the quota. Given this fact, it can be said that U.S. universities adopt quota system on a partial basis. In some countries, point-addition system is adopted for a particular group of people. The communist countries give additional points to labor workers in competing for admission to university. In Korea a similar system applies to employed workers in their bidding for admission to university, providing that they pursue the program with a direct bearing on their work. Since the points added to this group are minimal, this system does not reap tangible effect.

These systems are intended to boost up the competitiveness of those who are disadvantaged in competing for admission to university, thus reducing the gap in educational opportunity. This is not the place for discussion on each of them in terms of strength and weakness. It is worthwhile, however, to take note of what is common among them, that is, the active involvement of the government in helping disadvantaged people gain equal access to education. In this context more studies need to be conducted with regard to how to ensure equal opportunity for education for all desirous of it.

2. ELIMINATION OF QUALITY GAP IN EDUCATION

Prospects

Equality in Education

The principle of equality in education takes a different connotation depending on the stage of educational development. It usually changes in the order of permissive equality in educational opportunity, to guaranteed equality in educational opportunity, curricular equality and to equality in educational outcome. The change of equality is accumulative, therefore, without eliminating inequality in the previous stage, it may result in the worsening of problem associated with inequality. In the case where an attempt is made to realize curricular equality with inequality in opportunity unsolved, it is possible to overlook the people who had no access to education. While policy seeks to realize curricular equality for those who were favored with an opportunity for education, unfortunate ones may be left to burn important bridges to the future.

Policy to seek equality should vary with school level, because development state varies with school level. Having passed guaranteed equality in opportunity, attempt is made to realize curricular equality on the elementary and secondary levels. On the tertiary level, permissive equality in opportunity is the primary concern. But a school level is not clearly distinguished from the other in terms of the concept of equality. Although elementary education saw curricular equality realized to greater extent, still there remains much of curricular inequality to be eliminated. Equality in educational opportunity is guaranteed in high school education. But in actuality, there are a sizeable segment of people who claim for the assurance of equality in educational opportunity.

Given this premise, gap in educational quality becomes controvertial in elementary and secondary education. In higher education, inequality in educational opportunity is a matter of primary concern.

Gap Among Schools

Regional disparity is prominent in facilities, teachers and cost per pupil of primary schools. Space per pupil and teacher- student ratio in Seoul and Busan are unfavorably compared with provinces. Disparity is also noticed among provinces. Worthy of attention is the gap in audio-visual equipment between urban and rural areas.

The same can be said of middle and high schools. In the status of physical facilities, urban schools have twice as much as rural schools. And in terms of teacher's experience and professionalism urban schools excel rural schools.

Gap among schools is not limited to primary and secondary schools; there is a wide gap among universities in physical facilities, library facilities and the quality of faculty members. This reality gives urgency to eliminating gap among schools.

Table II-5
Audio - Visual Equipment of Primary Schools (%)

Equipment	Seoul	Busan	Chung Buk		Chung Nam		Kyung Buk		Cheon Nam	
			Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Film projector	75	65	228	3	76	2	154	9	221	3
Slide projector	43	34	558	11	318	6	300	15	436	6
Overhead projector	80	20	328	6	248	4	53	12	282	6
Projector	43	6	141	3	66	1	50	4	254	5
Screen	76	49	337	4	228	5	133	7	256	4
Audio recorder	210	122	1,581	20	213	13	615	21	909	14
Radio	68	25	909	21	614	8	363	12	529	15
T.V.	34	10	505	5	219	4	170	11	319	5
Photographer	172	128	1,585	8	767	7	1,075	23	1,031	8
Mobile Amplifier	113	108	1,396	7	423	7	788	10	1,283	8
Phonograph	175	89	1,151	8	795	6	568	2	804	8
Microphone	612	299	4,841	121	2,946	136	2,115	200	4,306	156

Note : Percentage = $\frac{Q}{N_1I_1+N_2+I_2+N_3+I_3+N_4I_4} \times 100$

Q : On hand N · Number of standard classrooms I : Legal requirement

Source : Ministry of Education, *Statistical Yearbook of Education*, 1978.
Boards of Education, *Statistical Yearbook of Education*, 1978.

Table II-6
Regional Disparity of Schools

School level	Regional Division	N	Physical facilities			Teaching professionality		
			M	SD	F	M	SD	F
Middle School	Seoul	12	13.8	1.6	4.3**	14.6	2.5	3.6*
	Large cities	14	13.1	3.4		12.6	3.6	
	Medium cities	17	10.9	3.0		13.3	1.0	
	Rural	37	7.5	4.4		12.1	3.1	
High School	Seoul	22	13.6	2.3	8.0***	16.3	2.7	7.8***
	Large cities	13	13.6	3.0		14.9	1.2	
	Medium cities	19	11.9	3.4		14.3	1.8	
	Rural	20	7.6	3.8		13.1	3.8	

$^{*} p < .05$, $^{**} p < .01$, $^{***} p < .001$

Korean Educational Development Institute, *Determinants for Disparity of Education, 1981.*

Policy Tasks

To Eliminate Gap among Schools

To ensure equality in educational quality, gap among schools should be eliminated particularly on the secondary level. The policy to eliminate gap among high schools has been promoted, cognizant of problems resulting from "the first-rate school fever." It has been limited to large cities with the abolition of entrance examination to high school. This policy should be extended nationwide. Equalization should be promoted in the direction of improving educational conditions, including physical facilities, equipment and the quality of teachers.

Gap in education quality is a matter of serious concern in higher education, as it increases competitiveness for entrance to colleges and universities. The gap is more prominent in internal rather than external facilities. Lab equipment, library and research facilities should be expanded and the quality of faculty members should be upgraded prior to an attempt to amplify external facilities.

Quality gap among faculty members is another problem not to be littled. Recruitment policy should demand that the entry level to faculty members be Ph.D. and the incumbent faculty members who have not obtained the advanced degree be encouraged to pursue programs leading to it. The faculty development policy should shift the point of emphasis from overseas study to in-country degree programs and increase support for the development of advanced studies.

Supplementary Education

Achievement gap is noticed among regions and among social and economic strata on all school levels. The achievement gap may not be so serious in nature as we presume. Given the reality where entrance to college is exclusively dependent on the results of achievement test, however, it takes a serious dimension of social problem. This gives urgency to the elimination of achievement gap as an initial step to realize equality in educational quality.

The effort to eliminate achievement gap is linked to dealing with all factors that account for gap among schools. Nevertheless, research results revealed that ensuring equality among schools does not necessarily lead to the equality of achievement. It was revealed that family background had a profound impact on achievement. For children from culturally and economically deprived families, supplementary education was offered in preschool ages and while attending primary schools. It was primarily intended to develop basic learning abilities. Cases in point are Headstart and Follow-through Project in U.S.A. and EPA (Educational Priority Area) Project in U.K.

With the increasingly diversified backgrounds of pupils, Korea has reached the stage which brings the need for supplementary education to the fore. Remote areas and peripheral rim of cities are disavantaged in access to quality education, calling for supplementary education to put their children on par with their counterparts in other areas. Policy should provide for the institutionalization of supplementary education for these areas and accord priority in the distribution of educational resources. In final analysis, this is an effort to equalize the outcome of education.

3. DEVELOPMENT OF SPECIAL EDUCATION

Prospects

Increasing Demand for Special Education

The popularization of basic education and enhancement of living standards create conditions supportive of devoting greater attention to the handicapped children who can not receive normal education. With the upcoming extension of free compulsory education to the ninth grade, the importance of special education is highlighted not only from the viewpoint of humanitarianism but in relation to the need to develop the potentialities of disavantaged children.

The importance of special education is apparent from the potential contributions it can make to meeting technical manpower requirements. Modern production technology is of such a nature that does not require manual labor and that can be effectively performed by physically disadvantaged people. Apart from its importance from the economic viewpoint, the development of special education will go a long way towards the creation of a welfare society where the physically disadvantaged are guaranteed a decent opportunity to earn their own living.

Legal provision will be enacted, which mandates parents to enroll their handicapped children aged from 6 to 17 to school's and education, according to the heightening public concern for the welfare of children, will increase its role in helping individuals to possess productive skills to earn their own living.

Growth of Handicapped Population

With the development of preventive medicine, physically handicapped children will decrease in number, relative to the growth of mentally handicapped and retarded children. The handicapped status will be diversified, making educational needs more divergent. This will necessitate the creation of special classes of different kinds within a school, which calls for educational facilities different from the existent ones. Since special education will become an integral part of elementary education, secondary education should be reorganized so as to provide linkage with elementary education.

International Trend of Special Education

Due to the growing recognition that the effect of special education is greater when it is offered in the context of normal education than offered in separation from it, the so-called mainstreaming movement has gained prevalence in the 1980's. The mainstreaming movement is an attempt to deal with handicapped children in the group of normal children by individualizing instruction and providing treatment relevant to their needs. It stands in contrast with the conventional approach which featured the separation of them from normal children for special treatment. This movement holds both special and normal education teachers responsible for a joint designing of educational programs.

This new trend will suggest new approach to special education in Korea. This will stimulate a movement to integrate handicapped children into normal classes and devise a new way to group learning based on the principle of non-graded schooling. Accordingly, teaching method will have to be changed.

Policy Tasks

Expansion of Enrollment Capacity

Enrollment in special education should increase from the present 8.4 percent to 57.3 percent in 2001, and there should be 15,486 new classes. The number of pupils per class should drop to nine, while expanding treatment facilities. It should be made mandatory to have a special class. Nursing rooms, more than one in each school, should be established.

Since physically and mentally disadvantaged children form a very heterogeneous category, it is necessary to classify them, according to the degree of seriousness, into two categories – severe and mild. The latter may well be integrated into regular schools. Even if they are integrated, however, the actual treatment they receive in school may fall short of complete equality. This suggests that regular schools should be equipped with special materials and facilities for disadvantaged children.

To provide physically disadvantaged, persons with the capacity to earn their own living, special education should have a vocational orientation to be equipped with adequate facilities. The curriculum of special education should give a prominent place to productive skills and guidance program should be strengthened in this connection.

Table II-7
Increasing Enrollment in Special Education

Classification	1983	1991	2001
Relevant age group (6–17)	10,455,983	9,918,836	10,344,089
Handicapped children (2.66%)	278,129	263,841	275,153
Accommodation ratio (%)	8.44	30.44	57.31
Number of students	23,475	80,308	157,693
Special classes within regular schools	11,976	38,241	76,770
Special schools	11,499	42,067	80,923
Number of classes	1,576	6,234	15,486
Special classes within regular schools	714	2,660	6,726
Special schools	862	3,574	8,760
Number of special schools	71	185	422

Teacher Preparation in Special Education

With the expansion of special education, teacher preparation in special education becomes a matter of serious concern. The mainstreaming movement suggests an integrated form of teacher preparation, dealing with physically, mentally and emotionally handicapped children, the social and cultural misfits and even gifted children. The course of teacher preparation should give a place to special education so that regular teachers familiarize themselves with the ways to deal with handicapped children. Efforts should be made to develop a better understanding of special education on the part of supervisor and administrators through in-service training.

Since special education involves teachers in various fields, teacher preparation course should include the programs of behavioral, language and physical therapy. Due to the unique need to emphasize functional skills, competency performance-based program should be introduced to the course of teacher preparation. This program commends itself, for it consists of specifically defined steps. The special education teachers should be produced by four-year colleges and ensured of easy access to continuing education for advanced degrees. Considering the characteristics of special education, however, it is imperative that the teachers be distinguished from other teachers in terms of qualification, recruitment method and promotion opportunities.

The provision of an incentive scheme for special education teachers is also an important issue. Incentives must be provided, not only in monetary terms, but in the form of opportunities for promotion and better working conditions. Special education teachers should also enjoy the same opportunities to become administrators as teachers in regular public schools do.

Development of Special Education Program

Research evidences the importance of special education at earlier stages; earlier discovery of disadvantaged children and provision of relevant programs were reported to increase the possibility of remedying the handicapped children. It is necessary, therefore, to develop a wide variety of special education programs to be provided at earlier stages of development.

The need to individualize instruction is more acute in special education. Children should be given a wide range of program choices which fit the individual needs of learners and allowed to proceed learning in their style and at their pace. Going one step further, individualized instruction requires that learning objectives be defined for each learner and progress be recorded from diagnosis to evaluation.

Special education is not limited to instruction alone; it should be extended to nursing and medical treatment in school and programs should be developed for at-home guidance.

The end goal of special education is to help handicapped children to be economically and socially independent. Apart from schools, vocational training centers should give places to handicapped children. For severely handicapped children from needy families, the government should be responsible for providing living stipend while they are receiving occupational training. In this case, the government should be obligated to ensure them of employment corresponding to their training since they are by no means in a position to compete with advantaged children in bidding for employment.

Programs of vocational education should be varied according to school level. In middle school, it would be desirable to focus on the basic occupational skills needed in daily life. In high school, the program should be geared to the specific needs of industry to increase the employability of the graduates of special schools. Another alternative to vocational education would be a comprehensive type of school. As a means of ensuring employment, a special law may have to be enacted to provide a separate employment channel while guidance programs and monitoring schemes schould be strengthened.

Supplementary Measures

To increase support for special education, there should be a section exclusively responsible for its administration within the Ministry of Education, board of education and county office of education, staffed by supervisors and researchers educated in special education. To incorporate medical and educational services under as single purview, a coordinative body should be created at the central level.

Due to the growing importance of special education, a research center needs to be created within the university. Its fuctions should span a wide range of activities, including psychological and clinical studies, the development of curriculum, textbooks and supportive materials, the search for effective guidance programs and preventive measures, etc.

It is important to launch a nationwide campaign to enlist the public support for special education, which goes beyond the participation of charitable organizations. It is not fair to hold schools exclusively responsible for special education since it requires the concerted efforts of both schools and parents. In this regard, it is necessary to train parents. It would be desirable to familiarize them with teaching and treatment methods so that special education may be extended to the home.

III

IMPROVEMENT OF EDUCATIONAL CONTENTS, METHOD AND FACILITIES

With the explosion of knowledge, technological advancement and industrialization, outcry is set for education of higher quality. Pressure will mount to ensure the relevance of educational contents, institutionalize curriculum development on a professional base, enhance the efficacy of teaching method, and improve educational facilities. In this vein, how to ensure the quality of education is an overriding concern.

The development of curriculum should be based on the results of in-depth studies, subject to deliberation by professionals. There is a need to organize a curriculum deliberation committee. Teachers should enjoy greater degree of autonomy in curriculum operation. The improvement of teaching and evaluation requires flexible grouping of learners in a way that provides for learning at an individualized pace. The criteria for educational facilities should be adjusted upward on a realistic basis.

In response to the mounting pressure to upgrade the quality of education, this chapter discusses educational contents, teaching and evaluation and educational facilities in terms of their prospects and policy tasks to be undertaken.

1. RELEVANCE OF EDUCATIONAL CONTENTS

Prospects

Accelerated Increase of Knowledge

As new knowledge is generated at an accelerated speed, the goals and contents of school education are changing rapidly. The most prominent features of the change are the quantitative expansion and frequent turnover of knowledge. The amount of knowledge, which its expansion began to be accelerated in 1900, will double the present level in 2000. The change of this knowledge will be accelerated to render new knowledge obsolete in a matter of few years. The development of knowledge along these two lines will call for a significant departure from what they are in knowledge structure and contents. Without effectively responding to changing needs, educational contents will remain in backwaters and those which are taught at school will hardly be applicable to the reality. This trend will figure more prominently in the 2000's.

Social Demand for the Relevance of Educational Contents

Approaching the 2000's, the pattern of life and value system will undergo a significant change consonant with what is required of the highly industrialized society. The people will be more critical of educational goals and contents and more conscious of the accountability of school education. These will take a form of pressure for efforts to be intensified to upgrade the quality of education. The new educational efforts will orient educational goals and contents to develop an ability to effectively adapt to changing situations and to live a meaningful life. In view of new challenges, it is vitally necessary to develop a system to reflect political, economic, social and cultural needs in curriculum in a comprehensive and systematic fashion.

Heterogeneity of Students

As life-long education is increasingly systematized, education will be sustained over a greater time span with its clientele more diversified in terms of ability, needs and background. The abolition of entrance examination to middle school in 1969 triggered a dramatic increase of enrollment, widening the range of individual differences in middle school. The 2000's will see the same phenomenon reaching high schools and universities. The widening range of individual differences will necessitate the change of educational contents and teaching method. This change will promote educational development toward laying the foundation for pre-school and life-long education in the 2000's.

Development of Curriculum

Research will gain momentum with regards to educational goals, contents and method and the professional base will be laid for the development of curriculum. Amid the proliferation of knowledge, how to select ,organize and teach them will become a matter of special concern. Organizing curriculum, ensuring its relevance and developing the instructional materials should be an on-going process to be approached on a professional basis.

Cultural Heritage in Crisis

As inter-country exchange increases in all spheres of life, there is a substantial risk that the traditional culture will be submerged by the rising water of alien culture. What is acutely needed is to develop a correct understanding of traditional culture and inclination to actively participate in the creation of new culture by accommodating foreign cultures discreetly. The loss of cultural identity means losing sight of one's cultural root, which may result in the creation of cultural misfits. Amid the thickening trend of internalization, it is inevitable that one should remain open to new things. The initial step to become a cosmopolitanized person is to have a full grasp of one's cultural root.

Policy Tasks

Institutionalization of Research and Development Related to Curriculum

To implement research and development related to curriculum in a systematic fashion on a sound financial basis, the development of an institutional base is inevitable to conduct the following tasks.

1) Selection and Organization of Educational Contents

Selecting educational contents worthwhile to be taught and weaving them into a program are a pressing task to be approached in professional capacity. Selecting contents is the process of sieving grains from chaffs, which are highly transferrable to the reality. Organizing contents should be promoted in consideration of their relevance to social demands, learning approach responding to the unique nature of disciplines, self-learning experiences, and structure that facilitates the mastery of learning tasks.

In the case of kindergarten, program should be organized around plays and daily life experiences which facilitate physical development, socialization, linguistic and cognitive development, deemphasizing the traditional three R's. For lower grades of primary school, learning experiences crossing subject matters assume an important dimension in consideration of needs inherent in this particular stage of development. Subject matters may well be integrated. For higher grades of primary schools, optional subjects should be added to the common compulsory subjects. The curriculum of middle school should feature a wide variety of optional courses, considering that growth in this particular stage of development requires a wide variety of experiences for self-development. The curriculum of high schools is characterized by the necessity of giving opportunities to determine one's future career and to take preparatory steps. Again, they should be given a wide range of course choices associated with career development based on one's given aptitude.

2) Periodical Reform of Curriculum

Curriculum, textbooks and materials should be updated on a periodical basis, if they are to keep pace with the rapid torrent of changes sweeping the contemporary society. The reform of curriculum in particular should be based on empirical data provided by in-depth studies. Within this framework, contents to be taught at school should be modified and supplemented at the discretion of school principal or classroom teachers. Since the reform of curriculum involving all school levels entails a vast amount of workload, it should be performed in the context of a longitudinal plan which provides for annual implementation by school level.

3) Diversification of Curriculum

The ever-widening range of individual differences will render the standardized curricula totally irrelevant. Considering that educational contents should be such that helps individuals achieve self-realization, the mandate remain clear that they cater to individual needs and be operated in a way that gives flexibility in meeting new needs. The physically handicapped and the gifted children have a legitimate right to demand educational programs relevant to their abilities. Without diversifying curriculum, they are condemned to oblivion.

4) System for Research and Development

Considering the professionality and the magnitude of workload involved in research and development related to curriculum, it is inevitable to establish an organization exclusively responsible for them. The efficacy of a curriculum development system is ensured only when it is approached in a systematic fashion with a professional capacity. In view of the variety of subject matters involved, it is vitally necessary to support the development of university-attached research institutes through administrative and financial measures.

Curriculum Deliberation Committee

There is a need to establish Curriculum Deliberation Committee which is vested with basic planning, review and deliberation of curricula, and matters related to quality control and evaluation. This organization helps the central government in its attempt to establish a long-term plan, implement it and evaluate its implementation. The roles of curriculum deliberation committee are summarized into (1) to deliberate contents and structure of curricula before they are adopted and (2) to evaluate the implementation of the promulgated curricula in terms of whether instructions are in consonance with what the curricula are intended for.

In this regard, there are a number of policy tasks to be undertaken. First, the functions of Curriculum Deliberation Committee should be strengthened. The Ministry of Education is assisted by Curriculum Deliberation Committee which divides into sub-committees by subject matters and by school level, coordinated by steering sub-committee. Beyond the bound of advisory roles they are presently playing, they should be empowered to make decisions. Second, their functions should be strengthened in relation to quality control and evaluation. They should be enabled to evaluate how the curricula are implemented on the school and classroom levels. In this regard, planning for evaluation will be among the major functions of sub-committees. Third, the development of criteria for curricula and material development is a vital necessity.

Reform of Textbook Compilation Policy

Since the textbooks are standardized, there is no room for free choice. In view of the mounting cry to diversify textbooks, it is inevitable to allow free development of textbooks, with textbook committee created to be vested with quality control. The government functions of control and approval in relation to writing, compilation and publication should be transferred to a professional organization.

Textbooks assume an important dimension as the basic material containing distilled contents and stimulating learners. Amid the growing diversity of learning activities at school and classroom, however, textbooks can no longer become the sole medium of instruction. The conventional instruction exclusively reliant on textbooks should be changed to offer living experiences drawing on the resources of not only school but the natural surroundings and regional community.

Autonomy for the Operation of Curriculum

The effective operation of curriculum requires that teacher's quality be improved and autonomy be ensured for principals and classroom teachers. Educational objectives, contents and time table should differ from region to region according to the necessity of reflecting local characteristics. But the centralized control and the low quality of teachers militate against the autonomy of school and teachers. As the teachers holding master's degree increase in number, the professionality of teaching will be heightened, building a climate which supports the autonomy of school in curriculum operation. The school should be empowered to adjust the time of instruction and days of school attendance and the required number of credits in a way that best meets the unique needs of school or the community. Standardizing instruction hour at 40 or 50 minutes is not desirable in this sense. Rather the maximum and minimum hours of instructions may well be set forth to allow for the range of flexibility.

Education for International Understanding

The increasing volume of inter-country exchanges attaches importance to education for international understanding. The coverage of countries, which had been limited to the advanced, friendly countries, should be expanded to include the third world countries, including even communist countries. The educational potential of mass media should be tapped to the fullest measure for social education to promote international understanding.

The importance of foreign languages is further heightened in this context. Besides the first foreign language of English, other foreign languages should receive greater attention in curriculum. Efforts should be made to improve teaching method to ensure a balanced development of reading comprehension, writing and oral communication. At higher education institutions, area studies should be encouraged in a comprehensive scheme to synthesize different disciplines.

Physical Education

Physical education has suffered the lack of attention, although it deserves of greater attention as representing one of the three areas of concern, intelligence, virtue and health. As international competition is gaining intensity in sports, physical education has geared itself to the discovery and training of children with athletic potential to little concern for the development of physical fitness for all.

To restore physical education to normal operation, the number of hours assigned to physical education should be adhered to, physical education facilities expanded, training offered to enhance the professionality of teaching and research conducted to improve the quality of education. The current physical fitness examination should serve the goal of providing empirical data to explore effective ways of guiding for the entrance examination. The national power is the aggregation of individual physical strength. Viewed in this light, physical education might as well gear itself to improving the physical strength of all individuals and developing sanitary consciousness.

2. IMPROVEMENT OF TEACHING AND EVALUATION

Prospects

Education for Whole Person

The abolition of entrance examination to middle school in 1969 and policy measures taken in 1974 to eliminate quality gap among high schools created pressure for schooling to depart with the conventional emphasis on entrance examination. These measures helped considerably to equalize high schools, laying the foundation for the extension of free, compulsory education to the high school level. The examination-bound education will have disappeared from educational scene by 2000. As student achievement in high school is given heavier weight in determining eligibility for college entrance, schooling will concern itself with the inherent goal of education, that is, to help individuals to achieve self-realization. Teaching and evaluation will be directed toward serving this goal.

Learners' Growth with Diverse Background

The popularization of secondary and tertiary education is expected to enlarge the individual difference in a learners' group. The heterogeneity of learners' group calls for departure from the conventional instruction standardized for the average. New teaching and evaluation methods should be developed to cover the entire range of individual differences.

Capital -intensive Teaching

Economic, social and technological developments will bring doubt to the utility of conventional teaching characterized by labor intensity. New teaching method will be capital-intensive, drawing on new technology and multiple instructional materials. Computer and V.T.R. in particular will receive line light as new media for instruction.

Change of Evaluation Method

Evaluation method changed from the relative comparison of student achievement to norm-referenced evaluation, purporting to determine the degree to which objectives have been achieved. Approaching the 2000's, the norm-referenced evaluation will be the target of public concern with regard to its objectivity and reliability. There will be mounting public outcry to enhance the relevance of new evaluation method to education for whole person.

Policy Tasks

Flexible Grouping of Learners

The flexible grouping of learners makes it possible to individualize instruction. It does not necessarily mean dividing learners according to their learning abilities; rather it denotes the mandate that grouping should be flexible enough to reflect the needs of subject matters and contents to be taught. Capital-intensive teaching, which is facilitated by flexible grouping, provides a viable means to deal with learners with heterogenous backgrounds. Individualized instruction is the sole means of providing education for whole person.

The first step to be taken is to reduce class size. The maximum number of classroom stipulated by law should be adjusted on a realistic basis and the reduction of class size should be planned in a long-term perspective. In the case of primary school, class size needs to vary with grade level. 30 students per class is considered adequate for grades 1 and 2, 40 students for grades 3 and 4 and 45 for grades 5 and 6.

Multiple Teaching-Learning Materials

The effectiveness of instruction largely rests with the degree to which teaching-learning materials are utilized. The textbook is the epitome of standard contents. If instruction is to heed individual differences and needs, teaching-learning materials are not to be dispensed with. Considering the range of individual differences, the need remains clear to diversify materials to meet the different levels of learning ability.

Teaching-learning materials also need to be diversified by educational goal and the kind of technology used for instruction. The advent of computer left its mark on education in the form of computer-based instruction. The penetration of V.T.R. into instructional process gave rise to new types of instructions, for which teaching-learning materials should be developed. The kind of teaching-learning materials multiples with the introduction of new technologies. There should be a wide variety of materials, from which learners choose those relevant to their needs and abilities. They enable learners to learn at their own pace.

The government should increase its support for research and development related to teaching-learning materials and the dissemination of low-priced materials. To maximize the utility of materials, teacher training should provide for familiarization with them.

Development and Dissemination of Materials

The variety of individual differences necessitates the development of various teaching methods, with special reference to retarded and problematic learners. For the fast learners, enrichment program should be offered. In dealing with retarded learners, teaching should be individualized with the provision of supplementary program. Guidance in professional capacity is needed for problematic students.

New teaching methods should be developed in view of the characteristics of subject matters. The teaching of Korean language, for example, should be distinguished by that of mathematics. They need to be diversified by school level and the development stage of learners. Local characteristics cause teaching method to differ; rural students are different from their urban counterparts in motivation. Remote areas are very much in need of instructional materials to support the learning of children who suffer cultural deprivation.

The need to develop new teaching method is as much appreciated in social education, which has been left to haphazard process. In preparation for the increasing demand for social education, studies should be conducted to develop new teaching methods which reflect the physical and psychological characteristics of aged people. The government should take leadership to institutionalize a training scheme to improve the training capabilities of social organizations which engage in educational activities.

Modernization of Instruction

The flexible grouping of learners and individualization of instruction is facilitated by modernizing instruction. The children with scholastic potential should be allowed to enter school, even though they have not reached the legally-set school age. In this case, the way to determine eligibility for earlier entrance to school will be the issue of central concern. For those who have shown scholastic excellence, accelerated graduation should be considered. Reducing the days of school attendance from six to five per week also deserves of attention, since it is not only consonant with the worldwide trend but relieves teachers of heavy workloads.

The need to memorize simple facts will diminish with the advent of computer. In this context, home assignement should be adjusted to an optimum amount which enables youngsters to enjoy school life. The heavy load of home assignment is a serious impediment to the physical, emotional and intellectual development of child. This builds the image of schooling as a strictly controlled and disciplined life distinct from daily life. Efforts should be made to bring home that schooling is an extension of home and part of everyday life. The school in the 2000's will feature a new life which eliminates distinction between school education and everyday life.

The concept of place for learning, which is limited to classroom, should be changed. The place for learning is where learners encounter a person who wishes to share his or her knowledge and wisdom with others. Learning activities should be carried beyond school premises, if doing so better meets instructional needs. Concert halls, arts exhibition galleries and stadium are a few examples of outstanding places for learning. In the case of vocational high school, industrial plants are commended as good places for learning.

New Evaluation Method

In order for evaluation to do its share in education for whole person, evaluation should be individualized. This signals an end to the relative evaluation and open up the development of a new method with greater concern for an individual progress toward the goal. Since education sets its goal on self-realization, it is essential that educational goals should not be imposed on learners but be the making of one's own based on individual needs and ability. By encouraging learners to set forth their own goals, it is possible to do away with excessive competition among learners. New evaluation should encourage competition with oneself. The individualization of evaluation was advanced from the principle of "management by objective." It requires that all details be recorded about an individual learner, including personality, progress in learning, motivation, interest and others that teacher considers worthwhile to receive attention. The records become benchmarks in guiding the growth of an individual learner, worthwhile to be shared among teachers, parents and learners.

The scope of evaluation should go beyond student achievement to include educational program, teaching and conditions. It is frequently mistaken that the success of education depends entirely on the failure of individual students to achieve learning objectives. Considering that the failure of individual students have more to do with the educational program and teaching, it goes without saying that evaluation should be extended to other concerns.

System to Manage Student Achievement

National Achievement Examination needs to be institutionalized to evaluate primary and middle school education on a regular basis. This examination is expected to provide empirical data suggestive of ways to improve curriculum and teaching method. Information will be obtained from it, which is useful for the development of instructional materials.

The demand for examination is increasing in relation to entrance to school on the higher level, employment, scholarship awarding, and psychological testing for various purposes. There emerges a need to integrate all examinations and evaluation functions into a single body.

It will make it possible to approach evaluative tasks in a professional capacity and in a systematic fashion, as well as providing information for various educational purposes. From the financial viewpoint, this system is commended, for integrating all functions into an organization brings about the economic utilization of human and financial resources. It should serve as the information center to be drawn on by policy makers and classroom teachers. Specifically, the functions of the system should include: (1) research in theory and practice, (2) construction of questionnaires, (3) development of various evaluation tools, and (4) evaluation planning.

3. EXPANSION AND MODERNIZATION OF EDUCATIONAL FACILITIES

Prospects

Change of Physical Facilities

The rectangular classrooms of uniform size is not suitable to diversify learning activities. By drawing on educational technology, it will be possible to cater instruction to individual needs with the resultant diversification of teaching method. The flexible grouping of learners entails the necessity of moving from one classroom to another, as contrasted with the conventional way of teaching all subject matters in one classroom.

In view of the increasing diversification of teaching method and the necessity of grouping learners in a flexible way, the school building should undergo structural change which allows for classrooms of different shapes and different sizes.

Increase in Demand for School Buildings

Educational facilities have been expanded since the Liberation, but the expansion of facilities have been outpaced by the growth of school population, with the result that physical conditions for education are far from requirement. The chronicle problem of educational facilities hit primary schools in the 1950's and the 1960's. Coming to the 1970's, this problem was transferred to middle and high schools, with the popularization of education on this level. The same problem is now plaguing higher education (Table II-8).

Table II-8
Space of School Building per Pupil

in m^2

School level	1978	1981	1982	1983
Kindergarten	4.7	2.2	2.3	2.5
Primary School	4.1	2.2	2.3	2.5
Middle School	2.2	2.2	2.4	2.4
Academic High School	3.3	3.2	3.2	3.3
Vocational High School	4.1	4.3	4.4	4.4
Jr. College	8.6	7.6	7.4	7.1
Teachers' College	34.6	15.4	15.4	16.3
Col. & Univ.	13.7	9.1	8.5	8.2

Source : MOE, *Statistical Yearbook of Education*, 1978–1983.

The shortage of educational facilities will remain unabated and this problem will be aggravated by population congestion in urban areas. While schools are in the shortage of facilities, there will be an increasing demand for the facilities of social education. The realization of life-long education will be hampered by the shortage of educational facilities.

Backwardness of Educational Facilities

Both internal and external facilities of school are backward, while house and public facilities are modernized. 13.9 percent of total primary school facilities are in need of repair and modification, and this percentage rises to 17.4 percent in special classrooms.

The same can be said of internal facilities, including media, audio-visual materials, and lab equipment. Blackboard is the only thing that strikes eyes in the wilderness of classroom while advanced countries are busying themselves with exploring new possibilities of teaching through educational technology.

Backwardness is also seen in sanitation and supporting facilities. The limited space of learning develops aversion to learning, let alone the limited effect of instruction and hampers the physical growth of children. With the improvement of living standard, the public will set forth an outcry for a better learning environment.

Policy Tasks

Revision of Standard Requirement

The standard requirement of educational facilities is established by the law. But the concept of facilities and classification criteria are not clearly defined. Even the existent standard requirement of educational facilities is under-estimated.

The law should set forth the minimum requirement to be adjusted on a realistic basis and mandate all schools to meet it. Due to the difficulty of securing land in urban areas, it is advisable to separate criteria between land and building or differentiate the criteria according to local situation.

Securing Basic Educational Facilities

School facilities largely divide up into land facilities and building facilities; the former includes playground, stadium, farmland, forest, fishpoint and the latter includes classroom premises, museum, laboratory, dormitory, etc.

Table II-9
The Number of Classrooms Required

School level	1983	'84–'86	'87–'91	'92–'96	'97–2001
Kindergarten	5,910	3,605	9,381	12,840	23,874
Primary School	112,122	9,683	16,833	17,087	17,065
Middle School	41,852	3,919	6,943	7,364	6,895
High School	34,673	5,498	7,750	7,803	9,040

Note : Class is equated with classroom. Considering lab., shop, arts room, music room, etc., the demand for classrooms exceeds their requirement.

Table II-10
The Number of Schools Required

School level	1983	'84–'86	'87–'91	'92-'96	'97–2001
Kindergarten	4,276	1,451	3,185	3,654	6,368
Primary School	6,500	241	438	493	482
Middle School	2,254	177	314	333	325
High School	1,494	191	283	290	339

Notes ; 1) The number of classroom per kindergarten was set at 1.6 at public and 2.2 at private kindergarten in 1982 and 2.0 and 4.0 respectively in 2001.
2) A new primary school was assumed to consist of 36 classes.
3) A new middle school was assumed to consist of 18 classes.
4) A new high school was assumed to consist of 18 classes public and 24 classes (private).

The land space is the basic element of school facilities and the difficulty of securing land space in urban areas is a matter of serious concern. Out of 6,500 primary schools in 1983, those with more than 36 classes per school numbered 811, accounting for 12.5 percent of total, mostly located in large cities. It is urgently necessary to promote a plan to divide the over-sized schools and land space necessarily enters consideration in this planning. Legislative action should be taken to mandate city development plan to set aside the land space for school in a new residential area.

Another basic element is school building. The shortage of classroom is serious. The number of primary school classrooms in a double-shift system in 1983 was 8,952, accounting for 7.9 percent of total.

As the demand for the facilities of social education increases, a premises should be erected to house all educational and informational activities in each community, equipped with training facilities, including classrooms and dormitory.

Modernization of School Facilities

The growing variety of educational programs makes it inevitable to modernize educational facilities. Classrooms should be of different sizes and shapes in preparation for the flexible grouping of learners. Teaching media and aids and lab equipment should be modernized and this necessity is more acute in basic science and foreign language. Classrooms need to be modified so as to accommodate new teaching methods drawing on educational technology. By 2000, each classroom should be equipped with three computer terminals.

Physical condition is crucially important to develop motivation for learning. The classroom should be equipped with an adequate lighting and ventilation systems. Desks and chairs should be in a right size and shape that suit the physical characteristics of children. There should be rooms, one for each grade, where teachers engage in research.

Sanitary and recreational facilities should be modernized. Dispensary is a must in each school. New school buildings should accommodate educational facilities designed for special students in accordance with the necessity of allowing trafficking between special and regular classes within a school. Welfare and recreational facilities should be provided for teachers.

Maximum Utilization of Educational Facilities

The chronical shortage of educational facilities directs attention to the way to produce the maximum utilization of educational facilities. Double-shifting is an effective way to increase the utilization of facilities in kindergarten. Another way applying to primary school is to divide the dwelling area of students enrolled in a school into four divisions so that school attendance is arranged on a rotation basis throughout the entire period of a year. In this case, vacation does not have to be coincidental to summer or winter. The utilization of educational facilities has much to do with the time table. Computer has something to contribute in preparing a flexible time table which increases the utilization of facilities.

Playground and other land facilities are under-utilized. They should be open to the community, if the school is to serve as an educational center for community people. This is one way to eliminate dichotomy between school education and social education.

IV

IMPROVEMENT OF SCIENCE AND TECHNOLOGY EDUCATION

By 2000, information-centered industry will dominate Korean society. Competition among countries for economic power will eventually take the form of race for excellence in science and technology. In order for Korea to be in the rapidly developing frontiers of technology, the demand for scientists and technologists will increase sharply.

As industrialization proceeds, occupational structure will be diversified and job performance requires professionality to be enhanced. It is essential that career choice be based on aptitude and interest. Providing information on occupations and helping individuals make informed decision on career choice will be among the important roles of education.

Against this background, the importance of science and technological education can not be over-emphasized. Primary and secondary education assumes an important dimension as the corner stone for one's development into scientists and technologists. This chapter discusses policy tasks to improve the quality of basic science education and technological education.

1. SCIENCE EDUCATION IN PRIMARY AND SECONDARY SCHOOLS

Prospects

Accelerated Development of Science and Technology

The development of science and technology will be accelerated. To illustrate this trend in terms of the expansion of knowledge, the amount of knowledge generated from 1950s to 1960s equals that of knowledge generated for 50 years before 1950s. Coming into the 1970s, it took only five-years to produce the same amount of knowledge and the years taken to produce a comparable amount of knowledge are again shortened to 2-3 years after 1980s. To be sure, the expansion of knowledge will be accelerated.

The same can be said of industrial technology. A new revolution is taking place in genetics, computer industry and space science, exerting far-reaching impact on industrial structure. The advent of new technology precipitated structural shift from capital-intensive to knowledge-intensive industry marked by automation.

The change of technological environment calls for a drastic reform in the goal, curriculum and teaching method of science education, with greater concern for scientific thinking, scientific inquiry, scientific creativity and new values.

Conditions for Basic Science Education

Standing at the threshold of highly industrialized society, it is necessary to lay the solid foundation for a continual development. The solid foundation is created by strengthening basic science education, which comprises mathematics, physics, chemistry, biology and earth science. Without a firm scientific foundation, it is merely a wishful thinking to build a highly industrialized society.

The role of basic science lies in developing scientific thinking and creativity. The more a society is industrialized, the greater importance is attached to basic science education. Advanced countries devote greater share of resources to basic science education. What about our reality of basic science education? There are a host of problems to be solved, so far as science education is concerned. More serious problems are associated with curriculum, teaching method and educational conditions. There are numerous factors accounting for the backwardness of science education. Among others, the college entrance system can be singled out as being most detrimental to science education. The entrance examination reduced science education to a strategic drill geared to memorizing fragmentary knowledge as an insurance to gain entrance. Further, the contents and operation of science education curriculum are marked by uniformity and rigidity, which hardly leave room for the development of excellence. Technological advancement is led off by a thin stream of excellence. The present curriculum of science education is far from sharpening the edge of excellence.

The shortage of experimental equipment and lab facilities is another factor to be blamed for the backwardness of science education (Table II-11). This militates against the diversification of teaching method.

Table II-11
The Ratio of Laboratories and Equipment on Hand to Requirement (1981)

School level	Laboratories		Equipment	
	On Hand	Ratio to Requirement (%)	On Hand	Ratio to Requirement (%)
Primary School	1,100	16	580	58
Middle School	1,300	64	1,200	60
High School	2,000	70	900	65

Note : Equipment on hand of primary school is based on the 1978's data.

Lecture-bound instruction simply to impart knowledge will continue to dominate science education, unless drastic measures are taken to remedy it.

The Quality of Teachers in Basic Science Education

The quality of teachers is a key factor for the success of basic science education. The present training and in-service training of science teachers leaves much to be desired. A majority of science teachers have never been trained about curriculum, experimental methodology and inquiry learning. It is only the graduates of teachers' colleges who have ever encountered training on these topics.

Table II-12
Classification of Science Teachers by Educational Background in Middle School

Classification	National	Public	Private	Total	%
National college of education	19	2,598	275	2,892	41.9
Private college of education	1	468	273	742	10.7
Teacher's course in col. and univ.	1	1,132	1,676	2,809	40.7
Teacher training institutes	–	220	69	289	4.2
Qualification examination	–	83	21	104	1.5
Others	–	36	30	66	1.0
Total	21	4,537	2,344	6,902	100.0

Source : MOE, *Statistical Yearbook of Education*, 1983.

Table II-13
Classification of Science Teachers by Educational Background in High School

Classification	National	Public	Private	Total	%
National college of education	70	1,089	504	1,663	41.9
Private colleges of education	–	82	174	256	6.5
Teacher's course in col. and univ.	10	362	1,529	1,901	48.0
Teacher training institutes	–	16	15	31	0.8
Qualification examination	–	44	32	76	1.9
Others	–	18	18	36	0.9
Total	80	1,611	2,272	3,963	100.0

The present in-service training theoretically provides each science teacher with exposure to in-service training once every 25 years in primary school and once every 11 years in secondary schools. A cycle of this duration can hardly provide each teacher with actual opportunities to keep up with the expanding pool of scientitic know-hows. In view of this problem, teachers can not be counted upon to develop rational thinking and inquiry skills in youngsters. It is even less possible to provide elite education designed to produce high level manpower.

Policy Tasks

Reform of Teaching Method

The initial step to improve the quality of basic science education is to make teaching method relevant to the development of rational and logical thinking and inquiry skills. This calls for departure from the lecture-bound instruction and the reorganization of learning experiences around experimentation and practice, whereby learners are tempted to venture into the unknown. The reform of teaching method needs to be considered in three ways.

First, in order for science teachers to effectively provide inquiry-centered instruction, it is essential that they be exposed to a science curriculum which does justice to teaching methods in their training program. In the curricula of teachers' colleges and colleges of education, teaching method is dealt with in relation to the respective subject matter but it has little to do with inquiry approach. The non-teachers' colleges don't give any exposure to teaching method, though they produce half of science teachers. The inclusion of inquiry learning into the curricula of non-teachers' colleges is a vital necessity. The current in-service training system provides each teacher with an opportunity for training once every 10 to 20 years. It should actually be provided for every teacher once every five years. The in-service teacher training presently being offered by teachers' colleges and colleges of education should be expanded in scope to involve other colleges at the central and local levels.

Second, the physical conditions for experiment and practice should be improved in quantum and quality. The proportion of laboratories in existence to primary and secondary schools should be brought up to 80 percent by 1986 and 100 percent in 1996. The necessary lab equipment should be brought up to 100 percent by 1991. When it comes to costly equipment, a mobile science classroom may well be considered as a pool of equipment to be shared among schools. At the same time, efforts should be made to improve the quality of lab equipment.

Third, to enable teachers to provide experiment-centered instruction, the number of teaching hours should be reduced from 24 hours to less than 20 hours per week. Consideration should be given to the desirability of employing teacher aides for lab works or increasing the number of teachers.

Reform of Curriculum and Its Operation

The weakness of science curriculum lies in the uniformity of its contents and operation. Since they are standardized for the average level, those on upper level are not given challenges to stretch out their potential, while those on the lower level are left to burn important bridges to advancement.

It is crucially important to diversify program into various levels. In this case, it is advisable to set forth the minimum level for slow learners, defined in terms of objectives and mastery level and providing for the use of supplementary program. For fast learners, enrichment program should be provided.

Uniformity pervades the operation of curriculum. School and classroom teacher should be given greater autonomy to allow for the variation of contents to reflect local needs.

Development and Dissemination of Multiple Instructional Materials

With the startling expansion of new knowledge and information, how to reflect them in curriculum is a matter of serious concern. According to the present system, curriculum is revised in a ten-year cycle. Revising in this cycle renders it impossible for curriculum to keep pace with the rapidly developing frontiers of science and technological know-hows. With textbooks and teacher's guide presently in use, it is impossible to contain the vast amount of knowledge in the educational program of school. Therefore, priority attention is directed to quest for a breakthrough in this situation. Coming to the forefront of thinking is the diversification of instructional materials, including reading materials for students, guidebooks for lab works, resource materials for teachers, newsletters and journals. These supporting materials open the eyes of learners to a wide knowledge base beyond the purview of textbook. They also have the advantage of responding quickly to new knowledge during the cycle of curriculum revision.

Science Education outside School

There is a science center in each province and city, which includes an exhibition hall and laboratories. It offers the field of learning science outside school. The problem is that it is not accessible by students living outside the provincial capital city. Universally, it fails to provide for a balanced treatment of basic sciences, with major concern for physics to the denegation of biology.

Policy measures should be considered to make such a learning center accessible in other areas. There emerges a need to cater it to the unique needs of regional community. The science center should focus on production skills where industrial firms abound. In rural areas, the center may well focus on biological, botanical and fishery aspects. There is virtually no acquarium at the local level despite the fact that Korea has the natural advantage to develop fishery industry.

Science center may well be considered in small size which is suitable for the regional community. It needs to develop its characteristics by drawing on the natural environment as the field of learning. Farmland, forest and fishpond are good examples to stimulate interest in learning about the nature. The science halls in urban areas should be modified to mirror the nature as much as possible. Doing so, it offers exposure to natural creatures, particularly those not visualized in cities.

Institutionalization of Education for Gifted Children

As international competition is turning into a race for technological excellence, an urgent need is appreciated for an educational system which provides for earlier eruption of scientific talent. There should be a school for gifted children at the high school level. Advanced countries have provided education for gifted children at earlier stages of development to improve the competitiveness of technological excellence. National development comes to halt, unless self-sufficiency is achieved in technological development. Together with education for gifted children, it is imperative to develop a system of discovering children with scientific potential. Once they have been selected, it is important to ensure exposure to a program which stretches their potential to the fullest measure. The educational program on the secondary level should be developed in view of its linkage to higher education.

2. BASIC SCIENCES IN HIGHER EDUCATION

Prospects

Increasing Demand for High - level Manpower

The profile envisioned of the 2000's will resembles that of the United States and Western European countries which have a greater demand for high-level manpower.

According to manpower projection, the demand will exceed the supply capacity by 9,000 at master's degrees and by 1,800 in Ph.D's from 1982 to 1991. The shortage of high level manpower will be greater in the 2000's unless the supply capacity of educational system increases. Shortage will become more serious in mechanical engineering, management science, computer science, chemistry, environmental technology, chemical engineering and nuclear science (see Table II-14).

Table II-14
Supply and Demand of Scientists and Engineers

in person

Classification	Master			Doctor		
	'82–'86	'87–'91	'82–'91	'82–'86	'87–'91	'82–'91
Supply needed (A)	16,152	25,542	41,694	3,819	6,190	10,009
Present supply (B)	15,671	17,006	32,677	2,459	5,777	8,227
Graduate Schools	13,959	15,184	29,143	2,064	4,893	6,957
KAIST	1,712	1,822	3,534	386	884	1,270
B – A	△ 481	△ 8,536	△ 9,017	△ 1,369	△ 413	△ 1,782

Source : KIET, *Study on the Supply of and Demand for Advanced Degrees in Korea,* 1983.

Self-sufficiency in Technological Know-how

As international competition is turning into a race for technological excellence, technological protectionism will prevail, increasing the necessity of monopolizing technology.

The importance of basic sciences is highlighted in the context of achieving self-sufficiency in technological advancement. In view of the contemporary world plagued by environmental pollution, the drainage of food and energy resources and population problems, basic sciences assume greater importance as the source of solution. Basing the solution of these problems on basic sciences increases the possibility of solution. The technological fields of greater importance are electronic and computer science, precision chemical engineering, mechanical engineering, system industry, biological engineering, resource engineering, polymer science, architectural engineering, environmental engineering and plant engineering.

Conditions for Basic Science

Basic science education on the tertiary level is handicapped by the limited research capacity of higher education institutes. Research capacity rests upon the quality of research staff and physical conditions, including external facilities and equipment. Viewed from the dimension of physical conditions, those facilities and equipment on hand represent 40 percent of the legally set minimum requirement (see Table II-15).

Table II-15
Experiment Equipment and Facilities of Natural Science and Engineering Colleges

Col. & Univ.	On-hand (A)	Minimum Requirement(B)	B-A	A/B (%)
National	5,105	18,349	13,244	28
Private	6,363	11,886	5,523	54
Total	11,468	30,235	18,767	38

Source : Ministry of Education, 1980.

In terms of budgeting scale, university-based research centers are not comparable to independent institutes. Financial input to research and development is negligible, compared with those of advanced countries.

The research capacity of Korean universities can be viewed from the education level of faculties and faculty-student ratio. The ratio of 1: 33 in Korea is unfavorably compared with 1: 10 in advanced countries. The shortage of qualified faculty members is a chronical problem. The proportion of Ph.D holders to total faculty members in each department is another indicator of research capacity. The basic science departments, each of which is staffed by one Ph.D, account for 66 percent. The fact that humanities and social sciences are preferred to natural science among bright students casts dark shadow over the future of basic science.

Table II-16
International Comparison of Investment Scales in Science and Technological R & D Institutes

Countries	Years	Dollars Spent (million dollars)	Component Ratios (%)		
			Univ.	Research inst.	Industrial firms
Korea	1980	349	12.2	49.3	38.5
U.S.A	1980	62,285	13.3	16.3	70.5
France	1979	10,372	15.5	23.2	61.3
W. Germany	1979	17,933	16.3	15.2	68.5
Japan	1979	21,108	27.8	14.3	57.9
Switzerland	1979	2,287	17.1	5.5	77.4

Source : UNESCO, *Statistical Yearbook*, 1982.

Policy Tasks

Strengthening Research Function of Universities

Raising the research capacity of universities to the international standard is a pressing task which leads to the strengthening of basic science. Considering that more than 90 percent of Nobel Prize winners have come from the university-associated research institutes, the educational importance of them can not be over-looked.

The conditions for basic science education will be bettered by reducing teaching load, increasing financial support for research and books/materials, increasing the number of research assistants and simplifying procedural formalities for the purchase of equipment. The quality of researchers is of particular importance. One way to promote faculty development is to invite foreign scholars of world reputation to serve in Korean universities. A system should be institutionalized to provide representing the Ministry of Education, Economic Planning Board, necessary supports for the creation of conditions for them to work.

In parallel, consideration may be given to invite them on a short-term basis, ranging from one to two years, in connection with specific assignments. At the same time, thought should be given to the domestic source of researchers. In this case, it would be well to select a few universities or research institutes on the basis of their experience and facilities to expand their educational capacity in doctoral programs. This will enable resources to converge on a few, rather than thinly spreading over, to reap the greater effect of intensive support. It should be institutionally arranged that the graduates of these institutes go abroad to deepen their research experiences for one or two years.

Convertion to Graduate - centered Program

In connection with the development of high-level manpower, it is necessary to consider the conversion of some universities to graduate-centered program. Legislative acts should be taken to provide intensive support for their role in dramatising the potential of gifted children to technological advancement. The support should be comprehensive enough to encompass the improvement of experimental conditions, the upgrading of faculty quality, increased research allowance, the provision of scholarship, joint participation in research across national border and exchange of students and faculties.

The domestic source of master's and doctoral degrees should receive greater attention, while reducing reliance on overseas institutes of higher education. The domestic universities which offer graduate studies deserve of administrative and financial support. And accreditation and evaluation of them should be institutionalized as a mechanism vested with quality control. It may take the form of a committee or task force composed of scholars renowned in basic sciences and ranking officials representing the MOE, Economic Planning Board, and Ministry of Science and Technology.

Cooperative Research System in Basic Science

A cooperative system should be developed to provide linkage among universities and research institutes in research and development activities. This will facilitate exchanges of information and ideas, stimulate creativity and encourage the perception of issues in a broad context and enable the concerned institutes to share facilities. The immediate effect of joint participation in research and development is manifested in the improved ability of universities to reflect new industrial needs and to develop consciousness of the national cause of development. It facilitates exchanges of scholars by tearing down the barriers built among universities.

Establishment of Evaluation and Management System

As research grows in intensity, the need is becoming greater for quality control and evaluating. To enhance the quality of research in basic sciences, a system should be developed to be responsible for the selection of research tasks, research management and evaluation of results. It should be assisted by a consultative committee to be formed by members representing the Ministry of Science and Technology and industrial firms. Specifically, it should be charged with the selection and coordination of research tasks, inter-country exchange of scholars, management related to the use of overseas study participants, evaluation of research results and review of educational contents. Support should be given to faculty members and universities on a selective basis to help them conduct research and development in basic sciences.

3. DEVELOPMENT OF HIGH TECHNOLOGIES

Prospects

Increasing Demand for High Technologies

As high technology is emerging over the horizon as a new frontier

Table II-17
Priority of High Technologies

(%)

Industries	Total	Professors	Researchers (employed by research inst.)	Professional personnel in industrial firm
Conductor & computer	49.0 〔 1 〕	49.8 〔 1 〕	50.0 〔 1 〕	42.4 〔 1 〕
Precision chemical	4.3 〔 5 〕	5.0 〔 5 〕	4.3 〔 5 〕	1.5 〔 8 〕
Machinery	4.3 〔 5 〕	3.9 〔 6 〕	3.2 〔 7 〕	9.1 〔 3 〕
Energy and resource	20.0 〔 2 〕	20.4 〔 2 〕	17.7 〔 2 〕	24.2 〔 2 〕
System	2.6 〔 7 〕	2.9 〔 7 〕	2.2 〔 8 〕	3.0 〔 7 〕
Biological engineering	6.6 〔 4 〕	7.2 〔 4 〕	5.4 〔 4 〕	7.6 〔 4 〕
Material science	9.3 〔 3 〕	9.0 〔 3 〕	10.8 〔 3 〕	6.1 〔 5 〕
Textile, polymer science	0.6 〔 9 〕	0.4 〔 9 〕	0.5 〔 9 〕	1.5 〔 8 〕
Construction, environment, plant engineering	2.2 〔 8 〕	0.7 〔 8 〕	3.8 〔 6 〕	4.5 〔 6 〕
No response	1.1	0.7	2.1	
Total Responders	531(100.0)	279(100.0)	186(100.0)	66(100.0)

Notes : (1) Figures in (   ) are percentages of total .
(2) Figures in 〔   〕 are priority orders .

Source : Korean Educational Development Institute, *High-Level Manpower Development Plan in Science and Technology*, 1984.

of science, race is gaining intensity among countries for excellence in this new field. The economic and industrial growth of Korea will be exclusively dependent on whether Korea can keep pace with the rapidly advancing frontiers of high technologies, namely; conductor and computer, energy science, material science, genetics, etc.

The growing demand for high technology will alter the existent industrial structure. Continual search for new technologies will bring about higher productivity and higher standard of living, which in turn increases the demand for employment.

Acceleration of Technological Advancement

An analysis of new problems besetting Korea in the future suggests that the development of new technology be intensified. Technological development is a creative effort that takes risk and its validity comes from social recognition that the new technology is more cost - effective.

Korea lags far behind the three advanced countries in technological development (see Table II-18). Korea had owed its development to low labor costs and an abundant labor force which accounted for relatively low production costs. Having passed the stage of producing substitutes for imports, industries are now oriented to exports. Light industries are giving way to heavy/chemical industries. Korea stands on the frontier of technological development in the labor-intensive industries which produce textiles, ships and T.V. monitors. But in the capital-or technology-intensive industries, Korea is far from the advanced level. According to the Korea Chamber of Commerce data (Table II-19), reliance on foreign technological know-how in production is still heavy. In the production of 509 kinds of goods sampled for survey, less than 60 percent of technological know-hows used came from the domestic source. Considering that many of technologies from domestic sources were recopied from foreign technologies, it is vitally important to intensify technological development to achieve self-sufficiency.

Table II–18
International Comparison of Technological Development

Countries	U.S.A.	W. Germany	Japan	Korea
First half of 1970s				
Technology level (a)	100	49.4	41.0	0.6
Dollars spent (1)	30,427	8,230	7,277	39
(million)	(100)	(27.0)	(23.9)	(0.1)
Researchers (2)	523.3	91.1	226.6	1.3
(thousand)	(100)	(17.4)	(43.3)	(0.2)
Inputs of R & D (b) $\sqrt{(1)(2)}$	100	(21.7)	32.2	0.1
Technology exports (3)	3,805	262	113	–
(million dollars)	(100)	(6.9)	(3.0)	–
Patents (4)	69,926	39,388	18,439	16
	(100)	(64.6)	(30.3)	(0.0)
Effects of R & D (c) $\frac{(3)+(4)}{2}$	100	35.8	16.7	0.0
Technology development $\frac{a+b+c}{3}$	100	35.6	30.0	0.2
Latter half of 1970s				
Technology development	100	97.5	34.8	1.2

Note : Figures in parenthesis are percentages based on U.S.A.
Source : Japan Ministry of Science and Technology, *Science and Technology White Paper*, 1977.

Table II-19
Distribution of Technologies by Source

Unit: Cases, %

Classification	Self-developed	Development within country	Imported	Joint venture	Others
Knowhow	287(56.4)	13(2.5)	183(36.0)	23(4.5)	3(0.6)
Basic design	311(61.1)	5(1.0)	615(32.4)	22(4.3)	6(1.2)
Applied design	347(68.2)	4(0.8)	135(26.5)	21(4.1)	2(0.4)
Production skill	358(70.3)	1(0.2)	129(25.3)	19(3.8)	2(0.4)

Source : Korea Chamber of Commerce and Korea Ministry of Science and Technology, *Industrial Technology Survey*,1979, P. 36.

It is encouraging to note, however, that the economic growth of Korea has created a better condition supporting technological development (Table II-20). Korea did not cease to emulate the imported technologies; the imported technologies served as the fertile ground for new technologies to be created by Koreans. The amount of technologies exported by Korea have seen a steady increase and this trend will continue.

Table II-20
Status on Technological Development in Korea

Classification	Unit	'76	'77	'78	'79	'80	'81	'82
Patents/know-how	Number				7	8	6	11
	Dollars (million)				6.1	29.2	32.4	21.9
Technical contract	Number	5	25	33	84	63	110	129
	Dollars (million)	5.2	42.1	20.3	95.7	88.2	50.8	109
Computer Software	(million dollars)	2.3	3.2	2.8	3.4	4.5	6.0	22.3
Total	(million dollars)	7.5	45.3	23.1	105.2	121.9	89.2	153.2

Source : MOST, *Yearbook of Science & Technology*, 1983.

Compared with the industries of advanced countries, Korean industries still feature a higher proportion of labor intensiveness to the relative shrinkage of know - how proportion.

In view of this trend, reliance on imported technologies will continue for some years to come. But they will diminish gradually, as research and development are intensified to accelerate technological development toward self - sufficiency.

Increased Support for the Development of High Technologies

The development of high technology is more risk-taking in that it requires a longer time span and involves higher degree of uncertainty with regard to its success. Therefore, technological development should be promoted on a sound financial base. The government support is essential. The importance of government leadership in support is further heightened by the fact that competition among countries for technological excellence gives prevalence to technological protectionism within each country.

The countries which are most advanced in high technology devote 2 percent of GNP to technological research and development. Favored support for this is reflected in law and taxation. As exemplified by these countries, the government policy is the key factor to the development of high technology.

In 1984, Korea devoted 1.4 percent of GNP to research and development. Although it is not comparable to those of advanced countries, it is encouraging to see a plan being promoted to raised it to 1.7 percent in 1985 and 2.0 percent in 1986. As research and development are intensified, the need arises to develop an institutional infrastructure for managing, administering and coordinating R & D activities.

Table II-21
The Proportion of Investment in R & D to GNP

Countries	Years	%
U.S.A	1982	2.53
Japan	1981	2.11
U.K.	1978	2.47
France	1980	1.84
W. Germany	1981	2.67
Korea	1984	1.40
	1982	0.95
	1981	0.69

Source : MOST, *Yearbook of Science & Technology*, 1984.

Increasing Demand for High Level Manpower

The scarcity of natural resources gives urgency to the development of human resource, particularly high-level technological manpower in connection with the necessity of improving competitiveness of Korean industries. Table II-22 shows the demand for researchers projected in proportion to the expected development of industry. Yet this demand is far from those of advanced countries; the demand projected for the year 2000 in Korea is equivalent to that of Japanese in 1980.

Table II-22
Demand for Researchers in Korea

Classification	1981	1986	1991	2000	Japan (1980)
Researchers (thousand)	20	43	83	123	300
Researchers per 10,000 people	5	10	18	25	26

Source : Korea Ministry of Science and Technology, 1983

Table II-23
International Comparison of Scientists

Classification	Korea (1982)	Japan (1981)	U.S.A. (1980)	U.K. (1978)	W. Germany (1979)	France (1979)
Scientists	28,448	317,487	643,500	104,445	121,978	72,889
Scientists per 10,000 people	7	27	29	19	20	14

Source : *Japanese Science and Technology Bulletin* ,1982

Policy Tasks

Development of High Technology Manpower

The development of high technology manpower parallels research and development. In response to this need, it is imperative to streamline the higher education system with the creation of courses related to high technology. The creation of new courses should not be a simple addition of them to the existent ones. It is important to prioritise them in view of the unique situation of an institute or university. In the context of totality, courses should be restructured, with those of low priority trimmed down, if necessary. The graduate program may well be centered around one or two courses in consideration of facilities, faculty situation and investment plan of the institute. The functional specialization of higher education institutes should be promoted by the government with commensurate increases in financial and administrative supports.

The importance of education for gifted children is highlighted in relation to the development of high technology manpower. The existent high school system should include a program which provides for earlier eruption of technological potential through flexible operation of the program, including accelerated graduation, while ensuring its linkage to higher education focusing on high technology. The science high schools should be linked to the Korean Institute of Technology, which is scheduled to be opened in 1986.

Science and technology education should be given heavier weight throughout the entire period of regular schooling. Industrial firms should be encouraged to participate in educational, research and development activities. Viewed in a broad context, educational institutes, as the supplier of necessary manpower, and industrial firms, as the end users of trained manpower, constitute the two sides of a coin. The two should be effectively linked so that they approach education in a collaborative attempt. The linkage may take the form of functional specialization, with the former providing academic foundation and the latter responsible to enhance the professionality of workers. The envisioned cooperative relation is a kind of partnership which enables them to effectively share educational responsibility. The provision of scholarship by industrial firms will be a shot in the arm for education in school and the participation of technologists in education as a lecturer or as a resource person will do much to enhance the professionality of R & D within industry.

Higher Quality of High Technology Education

High technology, unlike others, consists of new knowledge which enables people to perceive sciences in a broad context and adapt themselves to new situations. Since they have been monopolized by few advanced countries, the other countries have a difficult access to them. This directs our attention to the development of creativity to generate new know-how within the national border and the development of information network that crosses national borders. This poses new implications for the role of education.

The development of creativity requires that curriculum be reorganized with new contents which expose learners to problems, whereby they strive to solve problems and develop logical thinking. In the ever-shifting frame of reference, a device should be built into curriculum if it is to effectively cope with changing situation.

Quality of Faculty Members

The effort to improve the quality of education in high technology places the present quality of faculty members into a new focus. The massive shortage of qualified faculty members in this new field is another impediment to the development of high technology (Table II-24). Consideration should be given to the possibility of inviting foreign scholars to fill out vacancies. For the areas of priority attention, it may be well to increase the amount of government scholarship which finance overseas studies of graduate students. The faculty members should be given more opportunities for refreshing program abroad so that they keep pace with the rapidly changing frontiers of technology.

Table II–24
Teacher - Student Ratio in Natural Sciences and Engineering Colleges

Classification	Col. & Univ.				Graduate Sch.			
	Total	Nat.	Public	Private	Total	Nat.	Public	Private
Professors (A)	6,553	2,072	42	4,439	63	13	2	48
	(3,862)	(1,464)	(34)	(2,364)				
Students (B)	267,222	63,261	1,677	202,284	14,163	4,286	30	9,847
Students per professor (B/A)	40.8	30.5	39.9	45.6	224.8	329.7	15	205.1
	(69.2)	(43.2)	(49.3)	(85.6)				

Note : Figures in parentheses exclude TA & RA, emeritus professors and those assigned to administrative position.

Source : MOE, *Statistical Yearbook of Education*, 1984.

Investment and Financial Support

High technology led off the second revolution and will continue to serve as the major drive for social and economic development. Considering its contribution to the wealth of the nation, increasing investment in high technology is more than justified.

In connection with the importance of developing high technology, high priority is accorded to education for gifted children, the creation of high technology courses and the necessary reform of curriculum. As shown in Table II-25, investment in the development of science and technology is less than half that of advanced countries, featuring a larger proportion of investment borne by the government. A plan should be laid out to present a clear vision of investment for the future to support a sustained development of high technology. Planning should

Table II-25
Investment in the Development of Science and Technology

(in 100 million Won)

Fields	Total	1983	1984	1985	1986
Basic science in elementary and secondary ed.	1,524(228)	263	375(59)	433(59)	453(109).
Technical ed. of tech. high sch.	835(197)	169(39)	198(53)	222(53)	247(53)
Technical ed. of jr. tech. col.	526(7)	82(7)	148	148	149
Science and tech. ed. of univ. & graduate sch.	765(390)	112(90)	177(100)	221(100)	255(100)
Total	3,650(822)	626(136)	898(212)	1,024(212)	1,104(262)

Note : Figures in parenthesis are foreign capital in 100 thousand dollars.
Source : MOE, *Statistical Yearbook of Education*, 1984.

be made in anticipation of needs to come and it should prioritise them and specify the way to build a climate supportive of investment. In this way, planning provides the framework for the formulation of policy measures in a consistent perspective.

The government support for research and development and scholarship grant should increase substantially. The support should include financing the reinforcement of the existent research facilities and the establishment of new research facilities, preferrably one institute for each field.

International Exchange and Information Exchange

High technology has a potential to spawn new demands in all spheres of life. Supporting the development of high technology is to provide vitality to the development of science and technological development in general. Despite the growing importance of high technology as the key factor to lead off developments in other strands, its development is hampered by the limited availability of information across national border.

As problems besetting us are assuming global dimension, the mandate remains clear that these problems be approached in a collaborative attempt of all countries concerned. This collaborative attempt is facilitated by the free exchange of information among countries. International cooperation should be promoted to support the sharing of research findings. It may call for the establishment of information dissemination system among research institutes a program to host seminar or training, in the fields of newly pioneered technology, and the exchange of personnel. Other cooperative measures may include the joint publication of reports, periodical hosting of seminar on a rotation basis, joint investment in the establishment of research institutes and joint creation of the fund for research and development.

V

STRENGTHENING OF CAREER GUIDANCE AND VOCATIONAL EDUCATION

As vocational concern is heightening with industrialization, career guidance and vocational education assumes important dimension. Its importance is further heightened by the growing concern for those bound to job market after graduation from high school. How to constellate their potential toward productive activities constitutes an important dimension of national development strategy.

The shift of industrial structure toward capital-intensivity is expected to bring forth a sharp increase in demand for highly proficient skill workers and multi-skilled workers able to deal with new job demands. As it necessitates the diversification of skill level, there will be a new demand for technicians who link engineers and production workers.

In view of the new needs, this chapter discusses how to strengthen career guidance, vocational education and technician education.

1. INSTITUTIONALIZATION OF CAREER EDUCATION

Prospects

Growing Importance of Career Guidance

Choosing a career relevant to one's given aptitude is more than important as the key to determine one's future. But the diversification of occupational structure, coupled with new jobs spawned in the dust of industrial change, complicates the process of decision-making with regard to the choice of career. Educational attainment will be no longer the sole indicator of one's competency, as greater attention is directed to personnel management system based on meritocracy. Competency and attitude, as demonstrated in the performance of works, will be more valid criteria on which to determine employability. Amid the growing concern for actual performance of jobs, simple skills and fragmentary knowledge will become obsolete. Accordingly there will be admonishing reliance on schooling as a means for employment and upward mobility. All of these new developments bring the importance of career guidance into a new focus. Unless students go through the process of making an informed decision on the future career and preparing for it through schooling, they may have to burn important bridges to the future.

Man is born with an aptitude and interest, which enables one to excel others in one's respect, and the detection of one's inherent qualities constitutes an important demension of career guidance. Given the fact that education aims at dramatising one's potential in relation to the career to be pursued, career guidance is the core of educational activities. Discovering individual qualities at earlier stages of growth and providing relevant program is what education is all about, and this will serve as the bridge to placing people into right places of occupation, with the resultant contribution to the social productivity of individual performances. Making an informed decision on future career leads to the greater good of society and the nation.

Growing Importance of Vocational Education

With the proliferation of new jobs, the present educational system is doubtful in terms of its relevance to emerging manpower needs. In relation to manpower needs, educational system may be considered in quantitative and qualitative terms. The problem in quantitative terms is manifested in the imbalance between supply and demand. The qualitative concern is with whether an educational program is relevant to the performance level required of a job.

With the scheduled extension of compulsory education and the rising enrollment in high school, vocational education emerges as an area of new concern for those destined to join labor force after graduation from high schools. Unless they are channeled into a productive stream, they will be condemned to a dead loss. The effect of vocational education will further highten when it is coupled with proper career guidance.

New Recognition of Vocational Education

Vocational education will remain in backwaters, unless policy measures are taken to provide vitality to it. The rigidity of operation, the inferior educational conditions and under-qualified teachers impede the supply of necessary manpower.

The conventional notion of vocational education that, it is designed for children from needy families is another impedement to the development of skilled manpower. Vocational education deserves inclusion into general programs as the base for career guidance. The tendency to view vocational education in separation from general education will give way to a realistic appreciation of the need to provide them in a single vein.

Vocational education will receive greater attention in relation to career guidance.

New Occupational Attitutde

The meaning of occupation is considered in three ways. First, the occupation is the revenue of income, with which to earn one's living. Second, it is through the occupation that man develops his or her potential to the fullest extent and derives the sense of accomplishment from it. Third, the occupation provides opportunities for individuals to share the responsibility of social development. In other words, the occupation constellates individual contributions made through occupational engagements to social development. People obtain social recognition in the form of advancement in social and economic status to the degree that they contribute to the society. The occupation received little attention in relation to its contribution to self-realization and social contribution while its importance is highlighted as a means to earn a living and to obtain social recognition for upward mobility through it. All in all, the individual dimensions of occupation are stressed. This trend is traceable to the mistaken view of occupation which leads to the lack of concern for the individual responsibility for the society.

As the society grows in complexity, people's attitude toward occupation will become a matter of serious concern. They seek to gain social and economic returns to one's occupational services. At the same time, it should be brought home that the occupation is a means for self-realization and that each member of society is obligated to do one's share in contritution to the good of society through occupational services.

Policy Tasks

Strengthening of Career Guidance

In the ever-shifting frame of reference, it is the primary responsibility of education to help individuals make an informed decision on future career and achieve self-realization contributing to the good of society. The educational program on each school level should provide for a mechanism to discover one's innate potential and to offer programs which stretch the potential to the fullest measure. For those bound to join labor force, vocational program should be offered to enhance their contribution to social productivity.

In kindergarten and primary school, curricula should do justice to the importance and the role of job to enhance the consciousness of work. The middle school should encourage students to explore various possibilities of career development and obtain basic information and data. It is in the high school level that students determine their future career and prepare themselves for it. Those bound to colleges should be given the educational program which prepares them for rigorous studies in college. The program should be operated in a flexible way that allows students to transfer from one stream to another as need arises. The vocational stream should occupy a substantial proportion of high school program, reinforced by career guidance given by teachers with professional capacity.

Development of Career Education

Career guidance should begin with pre-school age and continue well into adulthood, giving a balanced treatment of knowledge, skill and attitude, with different focus on each school level. In general, career guidance comprises three stages, namely, recognition, exploration and preparation. A systematic scheme of career guidance should pay attention to how to link school, home and industrial concerns.

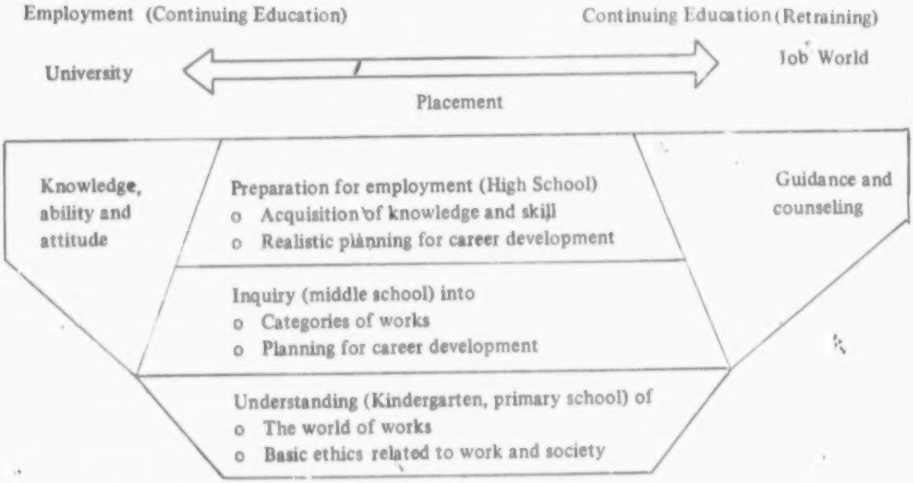
Employment (Continuing Education)
Continuing Education (Retraining)
University
Job World
Placement
Knowledge, ability and attitude
Preparation for employment (High School)
o Acquisition of knowledge and skill
o Realistic planning for career development
Guidance and counseling
Inquiry (middle school) into
o Categories of works
o Planning for career development
Understanding (Kindergarten, primary school) of
o The world of works
o Basic ethics related to work and society

Diagram II-1 Conceptual Model of Career Education

For the implementation of career guidance, it is essential to feed school with information regarding new developments in the occupational field. An information center may well be considered in the form of a joint venture in cooperation with the Ministry of Labor Affairs. This system may be computerized to facilitate the inflow of information between schools and job placement agencies. Career guidance requires active participation of parents, for they have profound impact on children in determining career. Consideration should be given to a cooperative relation among schools across regions so that the schools weak in career guidance can draw on the other schools which excel others. The information center in particular is more than important, since it continually keeps schools in view of the rapidly changing frontiers of industrial needs. Accordingly, it is essential that school program remains responsive to new needs.

To gather up-to-date information, school may well establish a cooperative network with various sources of information rather than exclusively relying on the information center. To help students explore career choices, a special program may be designed, using multi-media. The model presented here may be modified so as to fit the situation of each school. Teacher should be trained to enhance the professionality of career guidance, and teaching materials should be developed.

Development of Career Education Program

The first step of career education is to develop a program which specifies instructional activities. It should be promote in reference to other subject matters so that the program is given in a coherent and systematic fashion.

The second step is to develop the conceptual framework of career education. It should consist of contents which inspire self-discovery, familiarization with the world of works, self-planning for the chosen career and internalization of right attitude and value. These contents should be classified and sequenced by grade level. Within this framework, units should be developed by defining objectives for each objective. Teaching-learning materials and reference materials should be developed (see Table II-26).

Table II-26
Framework of Career Education Contents

Topics	Primary School	Middle School	High School
I. Self-discovery	· Discovery of one's interest	· Discovery of aptitude, ability	· Assessing one's aptitude and ability in relation to conditions
II. World of Work			
1. Kinds of Occupation	· Man and work · Industry & occupation · Division of labor	· Industry & classification of occupation · Occupation in modern society	· Change of occupation structure · Specification of each occup. & prospects
2. Occupation & Education	· Necessity of obtaining knowledge & skill	· Education for occupation	· Education for each occupation
III. Career Planning			
1. Selection	· Future hope	· Exploration of job	· Selection of job
2. Preparation	· Charting a path to realize hope	· Preparation	· Preparation
IV. Attitude & Value of Work	· Importance of work · Sense of accomplishment	· Necessity of job · Factors for selection of job	· Sound view of occupation · Working ethics

Establishment of Correct View of Occupation

After modernization has been pursued over the last two decades, many Koreans are mistaken about the view of occupation. Material orientation creates a tendency to increasingly rely on illegitimate and expedient means to earn personal affluence. The traditional respect for literary works bred a tendency to overlook skill and manual works. Still, a hierarchical view of occupations persists in a sizeable segment of population. Considering that this has been a drag on modernization, instilling a right view of occupation is crucially important. The foundation for the view of occupation is laid at home and school in earlier stages of childhood. Discriminatory view against particular occupations more often is the product of family backgrounds and this holds school responsible to remedy the mistaken view. It should be brought home that job is sacred, no matter what it may be, so long as it yields return to those exerting their bests to it. The educational effort to instill a correct view of education should be supported by a social climate where meritocracy prevails over the symbolic value of schooling. Personnel management should be based on a rational basis, doing away with favoritism and parochiality. Selecting a career in light of one's innate aptitude sets one on the direct road to stretch out his potential to the fullest measure. The occupation should not be viewed merely as a means to earn a living but also as a vehicle to realize one's life goal, that is, to dramatize his potential. One is strongly motivated to make progress in the career corresponding to his aptitude.

It is important to address "what is the sound view of occupation?" More important is the effort to define the environmental factors and to create a desirable social climate conducive to instilling the right view of occupation.

2. VOCATIONAL EDUCATION OF HIGHER QUALITY

Prospects

Proficient and Multi - Skilled Workers

The last two decades have seen the supply of manpower fairly balanced against its demand in simple production workers. Since they were schooled in secondary education, the shortage of simple production workers were easily patched through short - term trainings. The massive investment in technical high schools and occupational training institutes helped to meet the shortage of skilled workers spawned in the dust of rapid industrialization. In view of the imminent shift of industrial structure toward capital-intensivity, the growing demand for skilled manpower heightens concern for skill proficiency. The proficient and multi-skilled workers will be in a great shortage.

With the imminent extension of free, compulsory education to middle school and the popularization of secondary education, the occupational training programs aimed at those finishing middle school will shift their target audience to high school graduates. In parallel, on - site training may have to be strengthened for those coming from the academic stream of high schools. This will necessitate the realigning of the present high school into an integrated system featuring the combination of academic and vocational streams. As the secondary and tertiary industries grow in proportion, there will be a relative shrinkage of agricultural population. Farming skills should be mechanized, thus creating new technologies to be introduced into the curricula of agricultural high schools.

Diversification of Occupational Training

The vocational high schools and occupational training institutes are the major source of technical manpower. The functional specialization of vocational high schools was promoted by classifying them into mechanical high school, demonstrative technical high school, special technical high school and general technical high school, with emphasis placed on machinery, electricity, construction, and metallurgy. Occupation training programs are of various types; by ownership, there are public training and in-plant training. The problem is that there is no clear distinction between school education and occupational training programs. The government-initiated programs prevail relative to the shrinkage of private institutes. Given the limitation of the government-initiated program, the need is acute to encourage the participation of private sector. There is a need to establish a mutually complementary relationship between schools and private training system.

High Expectations of High School Graduates

The popularization of upper secondary education may blur distinition between academic and vocational high schools. With larger numbers of high school graduates destined to job market, a need arises for vocational programs to constellate them into productive works. But high school graduates suffer disadvantages, in comparison with college graduates in salary scale, opportunity for promotion, social recognition and other fringe benefits. The discriminatory treatment against high school graduates creates a tendency to avoid vocationl high schools and to despise blue-color works.

The demand for high school graduates will increase in the industrial concerns. Unless the socio-economic status of them improves, the pressure for entrance to colleges will be mounting, let alone industrial tecnnology brought to stagnancy. The lack of social recognition of the high-school graduates in blue-color workers represses the rising expectations of prospective technologists. In view of the new needs, it is imperative for schooling to respond to the rising expectations of high-schooled workers.

Table II–27
International Comparison of Wage Differential between Education Levels

Classification	Korea			Japan		
	1971	1976	1982	1960	1970	1980
College graduate	100.0	100.0	100.0	100.0	100.0	100.0
High sch. graduate	50.7	44.6	45.1	62.0	76.0	81.3
Mid. sch. graduate	29.0	26.3	31.5	45.0	64.0	68.5

Source : National Economists Associations, *Korea Economic Yearbook*, 1971 – 1982.

Policy Tasks

Relevance of Vocational Program in High School

The dichotomy of high schools between academic and vocational programs is not desirable in view of new needs looming over the horizon. Vocational program which includes career guidance should become an essential element of curriculum, which applies to all students. The vocational program should encompass broadly-based contents, not limited to specific technology but designed to enable students to effectively adapt to changing job situations.

Unlike the parochial nature of the conventional program, its contents should be pervasive to cover not only skills but attitude, ethical aspects, managerial skills, human relation, quality control and safety measures. Task analysis should be built into the vocational program to reflect industrial needs on a continuing basis, with efforts being made to ensure a balanced treatment of skill, theory, and shop practice. Emphasis should be placed on shop practice. An operational plan should be laid out to maximize the utilization of a mechanical high school as a center for vocational program to be shared among the high schools in a region.

Agricultural program should be on the vanguard of technological innovation for farming and produce the nuclear force of agricultural development. The fact that a sizeable proportion of agricultural high school graduates are siphoned off to other fields poses new implications for the role of agricultural high schools. But it is imperative that the new role of agricultural high school should be synchronized into an incentive scheme for its graduates to engage in farming. It may include credit loan to finance self-operating farm and land reclamation.

As industrial concerns develop into large sizes, commercial program in high school needs to be updated. Foreign language and computer education constitute important dimensions of commercial program. A valid skill test system similar to technical certification examination should be in effect to the graduates of commercial high shools. The schools equipped with better physical conditions may be selected as demonstrative schools. Financial support should be considered, on a selective basis, for the schools advanced in physical conditions, program or teaching method to serve educational needs for other schools.

The gradual drain on existing food resources directs our attention to the need to develop new sources. This trend appears to justify placing greater emphasis on fishery education. The programs of fishery high schools should be more diversified and updated periodically. The replacement of wornout training vessels should be a priority concern and the actual operation of the vessels should be increased to a substantial degree. The funds required should come in totality from the national budget in the form of subsidy.

Improving the Quality of Vocational Education Teachers

High quality teachers constitutes a prequisite for the qualitative improvement of vocational education. Currently most teachers of vocational subjects are graduates of science or engineering colleges who have little or no pedagogical background. In-service training has been reinforced but its effect is limited due to the absence of incentives for the vocational subject matter teachers. The present qualification system should be revised to give due credit for industrial experience or licensed skill in qualifying for certification as a teacher of a vocational subject. The custom of placing excessive value on educational attainment should be done away with, while introducing meritocracy to qualify for employment and promotion. In order to attract able teachers, incentive measures should be devised in the form of special allowances and exemption from military duty. Non-monetary incentives include frequent exposure to overseas study.

Improvement of Physical Conditions for Vocational Education

Since the 1970's, there has been a gradual increase in investment in the physical conditions of vocational education. The increased fund notwithstanding, physical conditions leaves much to be desired in terms of their relevance to industrial needs and suitability to the curriculum. The insufficient fund for operation caused much of the existent facilities to be under-utilized. Part of the problem is traceable to the purchase of wrong equipment.

The effort to upgrade the quality of vocational education requires increased support for improving educational conditions. A commensurate increase in the fund for operation should be made to ensure the maximum utilization of the facilities.

The skills envisioned of the future are such that can be acquired through repeated cycles of practice in highly sophisticated working situations. They require a tremendous amount of experiential and participatory learning. Due to the cost of equipment involved, it is sensible to establish a practice center within a better equipped school, with a pool of expensive equipment to be shared among the schools in a region.

Access to Continuing Education

It is important to ensure employed youths of access to continuing education, lest they should be condemned to a dead loss by being behind the times. The rapidly changing frontiers of knowledge makes education a life-long process. From the perspective of life-long education, ensuring access to continuing education is more than justified.

The employed youths are given a favored channel leading to admission to colleges in separation from the open, competitive examination. Once admitted, they should attend regular classes. Since they are torn between work and study, they are an underdog in competing with regular students. The higher education system should allow for a separate course specially designed for employed youths, if they are to have access to continuing education.

The Air and Correspondence University is an welcomed entity, for it is exclusively designed for the adults who lost the opportunity for higher education by occupational engagement. The continuing education of this type should be accessibly by any one who wishes to have it.

Aimed at the audience of heterogeneous backgrounds, cirriculum should be of varied levels and its operation should be flexible enough to meet different needs. The flexibility of curricular operation is heightened by the use of multiple text materials. The open university may well gear its program to the needs of skilled workers to become technicians. It is necessary to establish a cooperative relation with higher education institutes in the community, whereby continuing education is the joint venture of the two, with the latter offering facilities. Remote learning based on broadcasting media is the most typical teaching method of continuing education. The variety and flexibility of teaching methods are the hall-marks of continuing education. There should be a broadcasting channel exclusively designed for remote teaching.

The student workers are handicapped in job performance since study takes a deep bite out of the time for work. They are hard pressed in fancing study. The employers should build a scheme into the operational system, which cushions student workers against the handicaps caused by schooling. Going one step further, a climate should be created to support them to continue schooling. The employers should not grudge financial aid, for it is an investment sure to yield return. The return is manifested in higher productivity of an employee.

Division of School Education vs. Occupational Training

The accelerated proliferation of technological know-how brings the limitations of school education to the fore; school education should redefine its goals in view of specific skills to be relegated to occupational training. It is imperative that school education deal with contents highly transferrable to changing job situations and lay the foundation for the acquisition of specific skills through job performance. Therefore, the reform of technical education in high school should be promoted in a way that brings it into a mutually complementary relation with occupational training programs.

The public ocupational training institutes should concern themselves with producing skilled workers in key areas of skills and their clientele largely consist of the graduates of generaal high schools. In-plant training is offered for production workers to upgrade their skill proficiency. Such a training eventually has the effect of accumulating technological know-how and enhancing productivity.

It is not only the functional relation between education and training that should be redefined but the relation between the government and industrial concerns should be established. Forcing school education to cover an entire spectrum of education and training is not desirable. Search for a new relation which provides for an effective sharing of tasks according to the afore-mentioned suggestion is a vital necessity.

3. UPGRADING OF TECHNICIAN EDUCATION

Prospects

New Demand for Technicians

Technicians are the intermediator between skilled workers and engineers. Their roles are to bridge the two categories of workers, to be pagesetters in works related to engineering, communication and instrument, to supervise skilled workers in construction and maintenance and to be directly responsible for quality control, laboratory management and system analysis. In the industrial concerns, the roles of technicians are not clearly defined. Frequently, engineers are reduced to play the roles of technicians. The roles of proficient skilled workers are hardly distinguished from those of technicians. But the sophistication of industrial structure will give a unique substance to the roles of technicians.

Incentives for Technicians

The lack of incentives for technicians accounts for the tendency to avoid becoming technicians. Since their status were not recognized socially and economically, the shortage of technicians have been in a vicious cycle. The lack of recognition has a negative impact on the development of junior technical college. The sharp increase in the number of junior technical colleges was traceable to the fact that a significant proportion of entrants used junior technical colleges as a stepping stone to the four-year colleges. Due to failure to respond to industrial needs, the employment ratio of junior college graduates was low. Unless incentive scheme is devised and technician education is improved dramatically, technicians will hardly find their ground, sandwiched between engineers and skilled workers. Concequently, technicians will be in a serious shortage, providing a motive for review of technician education.

Diversification of Training System

The manpower structure will resemble a pyramid composed of engineers on the top, technicians in the middle and skilled workers at the bottom. Each category will have unique roles and require a unique system of manpower development. The projected increase in demand necessitates the diversification of training systems, which grow in professionality.

The engineering college should reinforce its programs in response to the increasing demand for engineers. In view of the heightening professionality required of technicians, junior technical colleges should throw their full weight behind the upgrading of program quality. In this vein, the high school is mandated to broaden the base for the supply of skilled workers with special emphasis placed on humanities and basic science. The technical education of high school should concern itself with developing the ability of students to effectively adapt to the changing world of works. Vocational education builds on the basis of primary and secondary education, with concern for specific skills to be acquired. With the growing importance of occupational training, school education needs to be related with occupational training on a reciprocally reinforcing basis. The concepts of school-industry cooperation and life-long education will do much to strengthen the practicality of technician education and to transcend age limitations in continuing education. What is envisioned in the end is a system which enables works to parallel education on a continuing basis.

Surplus of College Graduates

With the sophistication of industrial structure, the demand for high-level manpower will increase. But the quota for admission to colleges and universities are expected to supply graduates over the demand, with a significant proportion of them spilled over from employment. Even those employed will find their jobs meanial and less lucrative for the amount of education received. The result is that higher education will be far less cost-effective and educational inflation will ensure therefrom. This may invite policy measures to control the supply of manpower with higher education.

Policy Tasks

Diversification of Junior Technical College Functions

The junior technical colleges which mushroomed in the late 1970's lost their unique roles as admission quota for four-year colleges and universities were expanded in the early 1980's. The curriculum of junior technical colleges should restore its unique identity which serves the needs of individuals, industries and the society.

In the first place, admission standard should be lowered by dispensing with the entrance examination and basing eligibility on student achievement. The curriculum should include more specified contents to be completed over 2–3 years. It should be diversified so as to suit the graduates of technical and general high schools and the employed workers who wish to switch to other jobs.

The contents of educational programs may well vary from region to region, going beyond the bound of industrial skills to include health, home economics, humanities, social sciences and arts. A short-term course is of special importance, in view of the necessity of increasing the employability of women. Due to the mandate to serve the community, it should offer a wide variety of adult programs.

Relevance of Educational Programs

With the diversification of junior technical college functions, the relevance of each educational program to the specific needs of the target group comes to be questioned. The effort to ensure the relevance of educational programs begins with job analysis as the initial step to organize contents around the defind objectives. The rapidly changing frontiers of technology mandate their programs to include contents highly transferrable to the changing reality. This suggests the need to emphasize basic science and to combine them with humanities and social sciences in an adequate ratio. The mix of general vs. special subjects and theory vs. practice may vary from course to course. Apart from the vocational course, literacy and enlightening programs of different duration should be the feature of junior technical colleges. Need assessment in each community will provide empirical data for the organization of short term adult programs.

Improving Educational Conditions of Junior Technical College

At this stage of industrial development, urgency is given to the qualitative improvement of technician education, which is largely contingent on program contents, teaching method, quality of teaching staff and physical conditions.

The program of junior technical colleges should not be the miniature of engineering colleges. It should retain its characteristics so long as it is designed for different target groups. Greater emphasis on practice should be made a major feature of junior technical college. The soure of teaching staff does not have to be the graduate schools; technologists with industrial experiences should be invited to teach at the college. When it comes to new technologies, heavy reliance should be placed on graduate studies abroad in staff development. The effort to improve the quality of incumbent teaching staff may well take the forms of seminar and workshop to be hosted in collaboration with industrial firms. It is crucially important to provide opportunities for them to renew industrial experiences on a continuing basis.

The minimum requirement of physical facilities should be adjusted upward. The government should initiate supports for the purchase of necessary equipment and the improvement of internal facilities. The effective utilization of facilities requires substantial increase in operational cost.

School - Industry Cooperation

School-industry cooperation, hitherto limited to the provision of scholarship and opportunities for apprenticeship, should be extended to the sharing of human resources and facilities, the improvement of the relevance of educational programs, and the employment of college graduates. There are tasks which can be more effectively performed on a cooperative basis—such as teacher training, job analysis, information services on current trends in the job market, placement guidance, etc.

The school-industry cooperation commends itself particularly for its role in enriching the industrial experience of teaching staff. In order that in-service training ensure a sufficient amount of exposure to industrial experience, it should be a joint venture of junior technical colleges and industrial concerns. From the cost-effective viewpoint, the school-industry cooperation is justified, since it makes for the sharing of facilities, with the former focusing on basic skill practice and the latter on the practice of sophisticated skill. The institutionalization of shop practice ranging from six months to one year before graduation is desirable. Junior technical college may cater its programs to specific needs of employed workers at the request of employer. It is necessary to link the job placement centers of technical colleges to personnel management sections of industrial concerns.

Improvement of Working Conditions

The poor quality of entrants to junior technical colleges has much to do with the working conditions for their graduates; they are disadvanced in employability, salary, promotion and fringe benefits. Unless the conditions improve, junior technical colleges will be in the vicious cycle of the same problem.

Increasing the employability of junior technical college graduates is the most pressing task to be followed by other measures. Others include the specification of jobs cut for the graduates of junior technical colleges, not to be trespassed by engineers or skilled workers. The additional two years of schooling over high school should be reflected in salary scale, and the salary gap with the graduates of four-year colleges should be reduced. The improvement of working conditions are also effected by other incentives such as the enlarged opportunity for promotion, encouragement to continuing education and compliments for the job well done.

Enlarged Opportunities for Continuing Education

Still a sizable proportion of entrants to junior technical colleges do not view them as the terminal point by being so much desirous of continuing education. The problem of technician education lies in that they regard it as a stepping stone to colleges and universities. The institutional restriction on their transfer to schooling on higher level may drift the problem of technician education into worse. It is important to ensure them of the opportunity to continue education according to their desires. It is required that air/correspondence courses and open university programs be extended to local areas. The graduates of junior technical colleges should be allowed to enter or transfer to four year colleges, while they are employed.

VI

DEVELOPMENT OF HIGH-LEVEL MANPOWER

The increasing social demand for high-level manpower precipitates the popularization of higher education and this trend will continue well into the 2000's. While higher education is reaching masses of people, it should maintain its excellence limited to a few elites.

The most pressing task in this connection is to enhance the quality of graduate education to the international standard. Given the limited availability, support should be given to graduate schools on a selective basis.

Enlarged opportunities for higher education requires that teaching and research staff be developed, curriculum be diversified, necessary lab facilities and equipment be secured, and other educational conditions be improved. But the limited availability of resources makes it inevitable to establish a cooperative network between higher education institutes and the industries which employ much of high-level manpower.

This chapter consists of the qualitative improvement of college education, and graduate education, strengthening of research and development and the establishment of school-industry cooperation.

1. QUALITATIVE IMPROVEMENT OF UNDERGRADUATE EDUCATION

Prospects

Popularization of Higher Education

The most prominent feature of social transformation in Korea is the explosive growth of educated population. The population of higher education which stood at 8,000 at the time of the liberation rose to 1,080,000 in 1983, showing 138-fold increase (Table II-28). Basing on enrollment ratio, Martin Trow classified higher education into elite education, mass education and popularized education.

Table II–28
Expansion of Higher Education

Years	Students	Teachers	Schools	Ratio to 1945		
				Students	Teachers	Schools
1945	7,819	1,490	19	1.0	1.0	1.0
1950	11,358	1,100	55	1.5	0.7	2.9
1955	84,996	2,626	74	8.4	1.8	3.9
1960	101,041	3,803	85	12.9	2.6	4.5
1965	141,636	6,801	162	18.2	4.6	8.6
1970	201,436	11,345	168	22.7	6.9	8.9
1975	297,219	13,981	204	38.0	9.4	10.7
1980	615,452	20,900	236	78.7	14.0	12.4
1983	1,075,969	30,049	258	137.6	20.2	13.6

Source : MOE, *Statistical Yearbook of Education*, 1945 - 1983.

In Korea, 28 percent of the college-aged population are enrolled in higher education. Therefore, higher education in Korea is in the stage of mass education, moving toward the popularization of higher education scheduled for the 2000's.

Heterogeneity of Higher Education Population

As enrollment in colleges and universities increases, the spectrum of student background will widen, increasing the necessity of higher education attempt to meet a variety of needs. The large heterogeneous group of students to be served will gear higher education to professional concern with more students seeking to take the disciplines of practical value, such as business, engineering, medical science and pharmacy. The professional orientation of higher education will bring forth a relative shrinkage of pure sciences. Professional concern will prevail over scholasticism.

There will be a larger proportion of students who seek to pursue the cultural aspect of higher education, concerned neither for professional aspect nor for academic pursuit. With the implementation of lifelong education, college and university will be no longer age-specific. The proportion of aged people to total enrollment will increase steadily. Higher education will increasingly feature the alternation of education and employment, stimulating the development of sandwich program.

Increasing Demand for High - level Manpower

There are numerous factors for the rapid expansion of higher education. Prominent among them is the growing tendency to view higher education as a means for upward mobility through the social hierarchy, popularization of upper secondary education and sophistication of industrial structure which creates demand for high-level manpower.

The shift of industry toward technology intensivity will require that highly educated people constitute the main stay of manpower. The government policy pertaining to industrial development is an additional spur to this trend. Higher education will be increasingly pressured to expand its enrollment and upgrade the quality of programs, in response to new demands.

Mutual Interaction between National Development and Higher Education Development

The development of higher education is essential to national development and this concept mandates the government to intensify its support for the development of higher education.

First, higher education produces educated people to play leadership role in all walks of life. Second, its institutions, represented by college and university, do not cease simply to transmit cultural heritage to succeeding generations; they further seek to create new culture through research function. Third, colleges and universities not only produce high-level manpower needed for national development but serve as a pool of expertises by letting their constituents work for development tasks in a consultative capacity. In view of their contribution to the society and the nation, colleges and universities will be called upon to play more dynamic roles in promoting the public good.

Higher education will provide blood to the vital artery of national development. It will receive a growing recognition as a means for personal success and national development. The more dynamic role envisioned for higher education suggests that the government should intensify its effort to promote the development of higher education.

Policy Tasks

Selective Expansion of Higher Education

The opportunity for higher education should be expanded in response to its increasing demand. But the degree of expansion should vary with discipline. In the areas which require relatively high cost for expansion and have direct bearing on national development, viz., natural science and engineering, admission quota should be maintained. The productivity of new investment in these areas has important implications for policy formulation. In the areas which do not entail the need for massive investment, it is sensible to leave enrollment to float with their social demand.

Table II–29
Indices for Expansion of Enrollment in Higher Education

Classification	1983	1986	1991	1996	2001
Graduate School	60	98	123	152	184
Col. & Univ.	773	945	1,048	1,089	1,199
Teachers 'Col.	12	20	24	28	29
Jr. Voc. Col.	216	247	290	304	351
Total	1,061	1,310	1,485	1,573	1,763

1983 saw 61.1 percent of high school graduates advancing to colleges and universities. This proportion will rise to 68.6 percent in 2001. Enrollment ratio against total population in the respective age bracket will increase from 27.9 percent to 47.3 percent during the respective period.

Policy Pertaining to Entrance Examination

In principle, the formulation of policy related to enrollment quota of universities should be left to the Council on Higher Education except for the areas of disciplines which have strategical implications for national development. Higher education has the double imperatives of serving personal and social goals on one hand and fulfilling academic needs on the other hand. The principle of equality should be realized in the form of educational program vis-à-vis the effort to maintain academic excellence. Among others, autonomy is the most essential condition for the fulfillment of the double imperatives.

So far as enrollment is concerned, control by the central government should be kept to minimum, while encouraging universities to approach it in a collaborative attempt. Policy measures enacted by the central government are more likely to invite uniformity and rigidity defying the divergent needs of the heterogeneous group of students. Autonomy is also justified from the fact that students, as the beneficiaries of higher education, bear the lion's share of educational expenditure and that three-fourth of universities are private.

Viewed from the necessity of ensuring the quality of higher education, the autonomy meant here should not be such that is "free for all." It is in this respect that a need arises for control and coordination mechanism. The functions of Council on Higher Education should be strengthened in relation to the assurance of education quality. Accreditation and evaluation system should be introduced, which sets criteria for the evaluation of faculty appointment scheme, physical facilities, curriculum operation and system management. The results of evaluation will indicate universities deserving of the full degree of autonomy with regard to enrollment adjustment.

Flexible Organization and Operation of Educational Programs

In the process of developing higher education, how to ensure the relevance of educational program is a matter of top priority attention. Rigidity and uniformity were the hallmarks of curriculum operation in the past. New challenges require that universities be more flexible in the operation of curriculum, keeping it in view of linkage with high school curriculum, personal and social goals to be achieved, and academic needs. The popularization of higher education causes the structural complication of its system, and there is a need to standardize educational program by level. But standardization should be promoted in a way that gives each professor a greater latitude so that he or she can individualize instruction according to individual needs.

Improvement of Educational Conditions

The most pressing task related to the flexible operation of curriculum is to secure teaching staff up to the legally-set requirement. Due to the extraordinarily long time taken to prepare for teaching on this level, it will not be possible to meet the requirement in a short span of time. Rather, it should be promoted on an incremental basis, scheduling the teacher-student ratio equivalent to the level of advanced countries to be realized by the late 1990's (see Table II-30 & II-31).

Table II–30
Number of Students Per Teacher of Higher Education

Classification	1983	1986	1991	1996	2001
Col. & Univ.	34.4	33.5	28.5	23.4	18.4
Teacher's Col.	22.3	25.8	23.5	21.3	19.0
Jr. Voc. Col.	33.9	32.4	30.4	28.4	26.3
Total	34.1	33.1	28.7	24.3	19.7

Table II–31
International Comparison of Teacher - Student Ratio of Higher Education

Classification	Korea	Japan	Taiwan	U.S.A	U.K.	France
Base Year	1983	1981	1981	1978	1979	1978
Number of Students per Teacher	34.1	17.6	20.1	16.4	8.8	20.4

Source : 1) Japan Ministry of Education, *Statistical Bulletin of Education, 1983.*
2) Republic of China, *Educational Statistics*, 1982.
3) Korean Ministry of Education, *Statistical Yearbook of Education*, 1983.

2. EXCELLENCE OF GRADUATE SCHOOL EDUCATO

Prospects

Increased Enrollment in Graduate School

Enrollment in graduate schools shows 5.9–fold increase over the level a decade ago, from 10,236 in 1973 to 60,282 in 1983. This increase is favorably compared with 4.3–fold increase in 1983. In all probability, the increase of enrollment will be accelerated.

The increased enrollment of students brings about a commensurate increase in the demand for teaching profession on this level, and this will put the enrollment of graduate school in spiral escalation. The growing sophistication of production skills creates more slots to be filled out by highly trained people and this is another factor for the upsurge of interest in graduate education.

International Competition for the Excellence of Manpower

Competition among countries is taking the form of a race for the development of high-level manpower. Therefore, the strength of a nation lies in the quantum and quality of high-level manpower. In a country like Korea, endowed with little resources, there is no other alternative but to relay on the development of human resource in order to improve her competitiveness.

In shifting toward technology-intensive industry, technological knowhow provides vitality to national development and sharpens the edge of competition with other countries. International competition, therefore, necessitates the development of graduate education which produces high-level manpower.

Self-sufficiency in the Development of High-level Manpower

Projecting the current trend of industrial transition, technology-intensive industry will be the main stay of industries in Korea by the year 2000. The increasing demand for high—level manpower will cause the demand for teaching staff of graduate school to be in spiral escalation.

The creative development of technological knowhow is the prerequisite for the development of technology-intensive industry, and this necessitates the development of graduate education to ensure self—sufficiency in the development of high-level manpower, while reducing reliance on graduate schools in foreign countries. So long as reliance is placed on foreign institutes of graduate studies, it is impossible to expect a creative development of technology which fulfills national needs.

Efforts should be made to lay infrastructure to develop the capability of graduate schools for creative search for new technologies. Manpower development should be promoted in a longer perspective, along with a plan to encourage research and development designed to meet the unique needs of Korea. It is often noticed that the borrowed technologies are at odds with what is needed in the social context of Korea. Therefore, the development of graduate education should be promoted in view of the necessity of reducing reliance on foreign institutes of graduate education.

Policy Tasks

Higher Education Centered around Graduate Studies

The task of upgrading graduate schools to the international level directs our attention to "how to ensure the excellence of master's and doctoral degree programs?" There are 170 graduate schools, including professional schools, which offer doctoral degree programs, with the total enrollment of 8,477. Since the enrollment thinly spread over 831 courses, the doctoral programs leave much to be desired in physical conditions and resources. The same can be said of master's degree programs. Given this fact, it would be sensible to divide the nation into five clusters of graduate schools, one or two schools playing leadership role for others in each cluster. These leading graduate schools should receive more intensive support for their growth into the institutes of international reputation. In these, graduate studies will actually dominate undergraduate programs in terms of enrollment and policy support.

Table II–32
Graduate Schools in 1983

Classification	Total		National/Public		Private	
	General	Special	General	Special	General	Special
Number of Schools	68	102	14	27	54	75
Number of Courses						
Master's Degree	1,314	230	399	41	915	189
Doctoral Degree	831	–	275	–	556	–
Number of Students						
Master's Degree	26,990	4,277	9,258	2,039	17,732	2,238
Doctoral Degree	8,440	37	3,013	37	5,427	–

Incentive for Competent Students

For highly competent college graduates, there are great chance of gaining lucrative employment. Attending graduate studies requires that incentives be offered, which more than compensates the opportunity cost foregone by them for schooling. Scholarship and other financial aids, including credit loan and tuition exemption, should be expanded to benefit a larger number of students.

Functional Specialization of Graduate Schools

The development of graduate studies involves a prohibitive cost. From the viewpoint of economy scale, it is not desirable to encourage each school to have a full range of courses which overlap with those of other schools. It is sensible to encourage an intensive development of a few programs in each school which retain characteristics according to the unique needs of region. The functional specialization should be supported by a cooperative system which provides for an effective sharing of facilities and resources among the school constituents of a cluster. Cooperation will be facilitated by the creation of joint lectures, transfer of credits earned in one school to another, joint planning and implementation of research and sharing of library and lab equipment. Such a cooperative system should be extended to the relation between graduate schools and national research institutes. Also, possibilities and work to the establishment of degree programs within a research institute may be explored, when considered to be appropriate.

Research - oriented Program

The purpose of graduate education does not lie in simply imparting knowledge. Since it is intended to develop the research capability of individual candidates for scholastic career, it goes without saying that degree programs should be organized so as to provide exposure to a sufficient amount of research experience. Doctoral degree is conferred upon the recognition of individual contribution to scholastic development through a creative search for a new theory. Research is the focal point of degree program. The administration of graduate school should be concerned with providing research facilities, materials and other necessary support for research performed by candidates for advanced degrees in cooperation with other research institutes.

Quality Control of Degree Program

Quality control of degree program should begin with the formulation of criteria for the creation of degree programs. It should build a continual appraisal of degree program into quality control scheme so that degree programs, once established, may be dissolved, if they are considered unit to the legal criteria. Comprehensive examination should maintain a high academic standard, which should be made subject to national standard criteria, if possible. The teacher - student ratio should be reduced to the extent that makes it possible to introduce tutorial system. Doctoral candidates should be provided with necessary facilities, viz., a study room within the library and a separate place within laboratory, to conduct research.

3. STRENGTHENING OF RESEARCH AND DEVELOPMENT

Prospects

Importance of Research and Development

The development of science and technology provides a viable solution to the problem of development associated with the scant natural resources. This reality gives a mandate that industrial development be promoted in the direction of encouraging transition toward energy-saving and technology - intensive industries. The development of such industries is exclusively contingent on the innovation of technology. It is not only the development of natural sciences that contribute to national development; social sciences have as much important role to play in the promotion of national development.

Natural science dramatised human potential to utilize the nature and to bring material advantages to bear on daily life of human species. But scientific inventions made by mankind become the cause of new threat to the existence of human beings. Research in social science is as much important in that it provides values that guide the use of scientific technology toward serving the genuine needs of human beings.

Research in Applied Science and Technology

The heavy and chemical industries are the dominant scene of Korean industries, soon to be followed by energy-saving and technology-intensive industry. With the upcoming advent of new industry, it is imperative to intensify research in applied science and technology on the basis of the theories of basic sciences. Research in this field should be promoted to encourage the production of substitutes for sophisticated machines presently imported from foreign countries, such as electronic telephone switch board, computer and conductor. The domestic production of these machines will do much to save the reserves of foreign currency. Along this trend, there will be an acute need to augment research in chemical technology, precision machine technology and energy-developing technology.

International Competition in Research and Development

Although Korea achieved remarkable economic growth, it is still far from realizing self-sufficiency in the development of new technology. The competitiveness of Korean products in foreign market was largely ascribed to low labor cost resulting from the abundance of labor force. But the low labor cost is no longer the factor that made Korean products competitive, as it is overshadowed by the spiraling cost of raw materials.

The viable alternative to ensure the competiveness of Korean products is to achieve self-sufficiency in quest for new technology. Search for new technology should be backed up by the up-to-date theories of basic sciences. Eventually, the international competitiveness of Korea should be linked to the creativity of Koreans, which is developed on the solid foundation of basic science.

Humanities and social sciences also have much to offer in relation to improving the international competitiveness of Korea. They equip people with values that protect themselves from the onslaught of foreign cultures. They restore the emotional and subjective dimensions of man, which forms the basis for our attitude toward life in general.

Policy Tasks

Reinforcement of Research and Development in Higher Education

The functions of higher education are education, research and service. It is through its educational function that high-level manpower is developed. Its role in research is reinforced by stimulating research to be conducted by faculty members. They provide services to the community and the society by participating in development tasks in a consultative capacity.

The university is the nerve center of community, favored with a pool of expertises to be shared among industries. It should serve as the pivotal point for research and development in the community. This is the reason why large enterprises are located around the university of high reputation. The university is in a position to lead industries in research and development and the performance of this role is facilitated by the division of responsibility between the two. It should be noticed that the reinforced function of university in research and development makes so much contribution to the professionalism of manpower.

Support for Research and Development

The initial step to strengthen the function of graduate school in research and development is to establish a basic science research center, and support should be intensified to bring it to the international standard. The investment in research and development in Korea is 1.0 percent of GNP, as unfavorably compared with 2.0–2.5 percent in advanced countries (see Table II-33). To achieve the economic gains targeted in the national development plan, it is imperative to bring this proportion to 2 percent of GNP on an incremental basis.

Table II–33
International Comparison of Investment in R & D

Classification	Korea	Japan	U.S.A	U K.	France	W.Germany
Base Year	1982	1979	1978	1978	1979	1979
Ratio to GNP *(%)*	1.0	2.1	1.9	2.2	1.9	2.4

Source : UNESCO, *Statistical Yearbook*, 1982.

First, investment in research and development should increase in the university-attached research centers. Of total investment in R & D., the university-attached research centers take 3.2 percent. Most of them are underscaled and the amount of research actually performed lead us to question their raison d'etre. The university-attached research center should concern basic science, and support should be intensified for the strengthening of their research functions. On the other hand, the existent research centers should be streamlined by dissolving or incorporating into others, if their accomplishments in research justify doing so. Consideration should be given to functional division between the research centers, as necessary from the viewpoint of cost-effectiveness.

Second, individual research should be balanced against joint research and the latter should give heavier weight to multi -disciplinary approach which sit astride various research institutes within or across universities.

Third, research grants should increase drastically. Spreading research grants over numerous research tasks is not likely to yield meaningful results. Neither is it desirable from the cost-effectiveness viewpoint. The allocation of research grants should accord priority to joint research projects to be performed on larger scales involving several research centers.

Fourth, it is important to ensure balance between individually-initiated research and those, whose need is appreciated in relation to national development. The public concern for the results of research serving the good of community and society suggests that a mechanism be erected to coordinate for a balanced distribution of research tasks and to identify research needs. The door should be kept open to research proposals and proposals should be selected on a competitive basis.

Fifth, science information center should be established to feed the most up-to-date information and data for research and to prevent the overlapping of research tasks. It should have its function strengthened in the periodical review of research performed at home to let the current trend of research known abroad.

International Exchange in Research and Development

The United Nation General Assembly held in December 5, 1980, adopted a resolution which set the third development period effective January 1, 1980 to promote the transfer of technology and scientific inventions across national border. Academics throughout the world form an international academic community through the publication of research, reports and participation in joint research. Academics have their own nationality, but they do not belong to any particular country so long as their academic activities are concerned. The Brandt report urged the advanced countries to make their resources and technological know-hows available to other countries, referring to the fact that research volume produced by the third-world countries account for 3 percent of its total. The exchange of scholars across national border is an essential element of scheme to promote scholastic activities. Overseas study should be promoted in parallel with joint research, whereby cross fertilization is facilitated.

4. ESTABLISHMENT OF SCHOOL - INDUSTRY COOPERATION SYSTEM

Prospects

Higher Education for Employed Workers

Coming into the 1900's the amount of scientific and technological knowledge doubled every ten years. After the 1950's the cycle of doubling shortened to five years. The expansion of knowledge will be accelerated in the future. Amid the rapid expansion of knowledge, employed workers will be fossilized as the functional illiterates, unless they are ensured to access to higher education. Social demand for higher education will increase steadily as a means for personal success and to meet industrial needs. The need to receive higher education will be more prominent in the jobs which require a high degree of professionalism. This prediction is illustrated by the fact that half of knowledge in engineering is made obsolete in six years.

It is important to ensure employed workers of access to continuing education, if they are desirous of it. The cultural aspects of higher education should reach not only the employed workers but the public, irrespective of sex. The wider base of highly educated people opens up the possibility of perennial growth for a nation.

Limitation to Self-growth of Higher Education

The university can no longer stay in the shadow of ivory tower; it is called upon to address problems spawned in the dust of daily life. Particularly, the role of university is emphasized in relation to its social obligation to fulfill educational needs for industrial and national development. The diversification of its roles necessitates the expansion of education facilities. The costliness of educational facilities sets limits to the growth of university in the capability of meeting divergent educational needs.

Limit to the self-gorwth of university necessarily invites the involvement of industrial concern in educational services. There is a need to develop a cooperative network between university and industry which takes the form of functional division. This will increase the possibility of its growth beyond the bound of self-growth.

Social Support for Higher Education

The three functions of university—education, research and service—can be viewed in the context of university's social obligation. Despite its contribution to social and national development, the support given to it by industrial concerns and public agencies is minimal. This is mainly due to the popular notion that the beneficiaries of higher education are students alone.

The knowledge and skill that people acquire through higher education are manifested in the form of higher productivity in industry. The university's investment in research leads off the innovation of production technology and the consultative service of faculty members to industrial concerns contribute to the rationalization of management. The effect of higher education is spilled over to industrial concerns and the society. Viewing the beneficiaries of higher education in a broad context justifies increase in social support for higher education.

Policy Tasks

Cooperative System for Education

The initial step toward the establishment of a cooperative system is to create the new image of university, particularly in relation to its service to the society. On the part of enterpreneurs, the university should be viewed as providing facilities and resources for them to draw on in raising productivity. They should make the point of entrusting to universities research for new technology.

Pertinent to school–industry cooperation is Industrial Education Promotion Law which was enacted in 1963 and revised in 1973. Now that legal basis has been laid, a system should be devised to maximize the utilization of resources in school and industry for education.

Employed workers should be allowed paid-leave to pursue higher education. In France, the law of continuing education, enacted in 1971, mandates employers to pay 90 percent of basic salary while employees receive in-service education. Following the suit of France, other western countries institutionalized paid-leave for education. ILO urged other countries in 1973 to follow this suit in the context of life-long education.

A post should be created to fill out by a faculty member exclusively responsible for school-industry cooperation. He or she should be commissioned to coordinate with industrial concerns, assess industrial needs to be reflected in curriculum, and operate industrial programs. The calendar of university should be organized so as to provide a continual utilization of university facilities around year.

Cooperative System for Research

Grappling with the rapid torrent of change, Korea has not been given a breathing spell to do justice to research and development in connection with industrial development. Standing at the threshold of highly industrialized society, simply relying on foreign technologies sets limits to furthering industrial development. Research and development should be intensified in quest for new technology according to a long-term plan for domestic development of technology. Basic science research provides fertile ground for technological innovation which leads to higher productivity.

Basic science research takes a long time, which requires an enormous amount of investment. Despite the fact that the university has a pool of human resources with high research capacity, they become a dead loss, due to inability to provide adequate physical facilities. Industrial concerns should increase their supports for basic science research at university. The selection of research tasks should be based on the priority order with greater emphasis placed on those which are expected to sharpen the edge of development. While universities are responsible for basic science research, industrial concerns should be responsible for development. There should be a system to ensure linkage between the two so that a whole range of disciplines are brought to bear on the development of industry.

Exchange of Personnel and Human Resources

There are three conditions to be met in linking university to industry in a cooperative fashion, namely exchange of personnel resources, creation of open climate to facilitate the exchange and sharing of resources.

The exchange of personnel should come first, as it creates open climate and gives an opportunity to assess the available resources of the two sides. On the part of university, a device should be developed to make the experiences of industrial personnel available to teach and assess the relevant of curriculum to industrial needs. Technologists may well be invited to teach in experiment and practice. The participation of technologists should be extended to the process of designing curriculum, operational planning, and evaluation. This should be reciprocated by inviting faculty members to teach theory-oriented contents of on-site training. At the same time, administrative arrangements should be made to climate obstacles to the exchange of personnel. The sharing of resources should also be promoted on a reciprocal basis.

VII

EDUCATIONAL TASKS FOR THE FUTURE SOCIETY

The nation still remains divided and this reality brings us home that national unification must be realized, however remote this goal may be. This holds education responsible for the inculcation of spiritual disposition for and an undeviating commitment to national unification. The strengthening of spiritual education necessitates the streamlining of teacher preparation system and the intensification of research intended to raised the relevance of spiritual education. Computer education assumes an important dimension as a way of life to live in a technological society. It deserves a heavier weight in crriculum with a commensurate expansion of necessary facilities. Teacher should be adequately grounded to provide computer education.

This recognition of population and environmental problems suggests the necessity of providing education to develop problem awareness. The provision of education for gifted children requires that new arrangement be made in curriculum, school system, selection and teacher preparation.

This chapter discusses specific tasks to be performed in relation to education for national unification, computer education, population and environment education and education for gifted children.

1. EDUCATION IN PREPARATION FOR NATIONAL UNIFICATION

Prospects

Little Possibility of Peaceful Unification

As territorial division is the product of ideological confrontation between the east and the west, the reunification of Korea is exclusively dependent on the power balance of the four neighbor countries. The chance of reunification will remain slim unless there is a change in the power balance which is inextricably bound up with the interests of the neighbor countries. The south-north relation in Korean peninsula becomes a matter of special attention in the context of relation among the neighboring countries. Although tension diminishes considerably, the south - north relation will undergo little change. Providing that this status will continue, the chance of national unification will remain slim by the year 2000.

Reduction of Tension in South-North Relation

Although there is little chance of national unification, the south - north relation will see tension diminishing considerably. Even though the proposed dialogue between the south and the north was short-lived after 1972, the relation will become a significant departure from what it is now under the watchful eyes of other countries. Further, the economic status of North Korea will keep it from committing another war. The neighbor countries don't want to see another war to break out in the Korean peninsula and it is much of their desire that the present status is maintained. The escalation of armament race among these countries rather serves as a drag on the eruption of armed confrontation. While tension is sustained at this level, seemingly peaceful status will prevail in Korean peninsula.

Another reason for the continued status quo is that North Korea can no longer remain isolated and will be forced to adopt open-door policy. The fact that other communist countries have already opened their doors to outside will exert pressure for North Korea to follow the suit willy-nilly. The economic problems facing North Korea will make it inevitable to increase trade not only with communist countries but with western countries. In all probability, the pressure for open-door policy will help to reduce tension which characterizes the south-north relation. But the reduced tension is not considered the sign of a new relation free of tension or mutual distrust. It simply means a situation with an abated tension and our concern is with how to make the most use of the changing situation.

Open-door Trend and Competition between the South and North

The open-door trend in North Korea will put a different complexion on the south-north relation in economy, politics, and social affairs and steps should be taken in preparation for possible changes. Most prominent among possible changes is that open competition will gain in intensity between the south and the north. Each side will advocate the superiority of ideology and the legitimacy of its government. Competition will further be intensified in political and economic fields. In anticipation of new challenges from the north, we should develop our systems to heightened stature to demonstrate the superiority of our systems over those of North Korea. Demonstrating the superiority of our systems is a way to heighten the possibility of national reunification through peaceful means. It will also have the effect of shortening time distance to realize this possibility.

Competition for Legitimacy

The open-door trend in North Korea will bring the south and the north into open competition in all spheres of life. This competition will galvanize each side to advocate the legitimacy of its own, as the possibility of armed confrontation seems to be a remote reality. Since competition for legitimacy involves ideological and spiritual confrontation, it holds important implications for education. We are sure to gain advantage in economic competition but the economic advantage does not necessarily ensure advantages in other competitions. To win the race for legitimacy, North Korea has long since strengthened political and spiritual education to instill the sense of subjective identity. Laying the spiritual foundation is stressed as the prerequisite condition for opening its doors to outside. Confronted with the possibility of open competition with North Korea for legitimacy, it behooves us to explore ways to strengthen political and spiritual education.

Policy Tasks

Establishment of Unification Ideals

Establishing unification ideals is the first task of giving substance to education in preparation for national reunification. In the absence of unification ideals, it is impossible to give consistency to unification policies and to give a far-sighted vision to educational efforts for unification.

The necessity of establishing unification ideals has been appreciated by Koreans but it appealed little to the generations who did not experience the Korean War. Despite the fact that they will be on the vanguard of achieving national unification in the future, they are devoid of a strong will to achieve the goal and a firm belief in its justification. Establishing the unification ideals is intended to fill this gap.

There are many points to be considered in establishing the unification ideals. The primary concern is with developing an ideal that is consistent with the ideological base of Koreans and national goals, rationally persuasive enough to ensure acceptance by the new generations and appealing enough to be echoed by our brethren in the north. It should be the product of a long, complicate process soliciting wisdoms of all people. To name a few essentials to be included, they are humanism, harmonious relation rooted in the traditional thoughts and concepts of modern state, such as democracy, welfare and justice. The clearly defined ideal, including these elements, will help to set corner stones for a systematic implementation of education for unification as well as serving as the guiding principle for our effort to ease ideological confrontation. As implied earlier, the task of establishing the unification ideal is so awesome in magnitude that a careful approach should be taken.

Justification for Unification

There is a wide recognition gap with regard to the justification for national unification. The old generations who experienced the Korean War accept the justification in an experiential and sentimental light, with little regard for rational and theoretical base. With new generations who have not experienced this tragic war, it is not easy to make the cause of national unification acceptable with guesto. It is even more difficult uphill fighting to ensure the strong commitment of them to the cause. The problem is compounded by the mix of skepticism and optimism among these new generations. Even more problematic is the acceptance, among some youngsters, of communism as a way of life. This result is partially traceable to the conventional practice of anti-communism education which was limited to instill abhorrence of communism. The stereo-type education is far from nurturing anti-communism in a broad sense that ensures flexibility in dealing with communists.

The justification for national unification should be predicated on a rational and theoretical base, if it is to have a persuasive appealing to youngsters. This base is laid by establishing the unification ideals.

Will to Achieve National Unification

The yearning of Koreans for national unification is stronger than in the other divided nations. The yearning will be no more than a wishful dream, unless it is turned into a strong will to accomplish it. Equally important is to ensure that new generations are as much determined to accomplish it. As the unification is delayed, the will to accomplish it tapers off. Losing the will to accomplish national unification means so much weakening of our ability to face new challenges from the north. This leads us to explore ways to sustain and reinforce the will of new generations to accomplish national unification.

Emphasis of Legitimacy and Superiority of System

One way to reinforce our will to achieve national unification is to have a firm belief in the legitimacy and superiority of our systems in relation to the north. Its importance is further heightened by the propensity of youngsters to be discontent with the reality, particularly in reference to the seamy side of capitalistic economic system.

Theoretical reasoning is not necessary to bring home the superiority of our systems for those who experienced the Korean War. Freedom itself that exists in the south is enough to indicate the superiority of our systems. Our systems are known for reflecting an attempt to embody the ideal of democracy for the well-being of people and to create a new culture on the basis of cultural heritage. By contrast, the alleged goal of communism to protect the interests of labor workers proved to be an illusion, as it was used as a means to perpetuate a totalitarian regime under a single dictator, with its entity completely severed from the cultural root. The two systems juxtapose in the minds of old generations, with the latter being guarded against.

The younger generations were cushioned against the harsh reality. The belligerence and perfidiousness of communists are a distant echo. With the lack of crisis consciousness, they turn their eyes to the unpalatable by-products of rapid economic growth. National policies to consolidate the foundation for national unification fall on their deaf ears. Their faddistic revolt against the reality causes no end of social disturbances and this may be extended to the negation of our systems. The social climate is befuddled by distrust, egiosm, hedonistic orientation, etc., all sapping the will to achieve national unification. There are many ways to counter these, but the most effective way lies in educational effort to convince the legitimacy and superiority of our systems.

In education, it is important to highlight the legitimacy of the Republic of Korea in the context of national history, the strength of our systems based on democratic ideals, the effectiveness of capitalistic economic system in meeting the economic needs of mankind, and new-nationalism based on the cultural root and with cosmopolitan orientation. In dealing with these, forum should be given, without diffidence, for open discussion on political, economic and social problems in a way to converge opinions on the solution of problems. The importance of participation in problem-solving, cooperation and reconciliation should be stressed. All of these contents should be woven into a meaningful program purporting to develop confidence in meeting new challenges of communists.

Reinforcement of Subjective Identity

The issue of national unification can not be entrusted to other countries, simply because territorial division was the result of ideological confrontation which brought the intervention of other countries. Dependency on other countries in settling this issue is to expect national unification to be achieved without regard for the aspirations and interest of Korean people. Dependency on foreign countries results in domination by foreigners. We should not repeat the same folly of inviting foreign intervention as we did to divide the nation. We should develop an ability to settle the problem for ourselves and to bring the nation into a heightened stature in the international arena.

Individually, Koreans have shown the propensity to be dependent on others, and this is extended to blind respect for others and self-denial. When this individual propensity is aggregated into a national character, the nation will lose sovereignty. This led to the demise of Yi-Dynasty and we glean an inevitable lesson from this tragic experience.

The irony of our reality is that, although the situation we are placed in is the making of foreign countries, we can not look to them in solving the problems of ours. We are militarily dependent on the United States, but we can't and should not expect it to guard us forever. The aid of friendly nations is possible to expect only when we have a strong will and ability to solve the problem of ours independently. Therefore, it is vitally necessary to sensitize youngsters to the necessity of self-help and independence so that they approach the task of national unification with the consciousness of a host.

Educational efforts should include the development of self-concept drawn from historical incidents and exposure to situations where students are required to make value judgments which reinforce their belief in the efficacy of self-initiation and self-responsibility.

2. STRENGTHENING OF COMPUTER EDUCATION

Prospects

The Advent of Small Computer

With the invention of transister and new vacuum tube, large computers, exemplified by ENIAC, UNIVACS and IBM 650, gave way to small computer. By using integrated circuit, it is possible to make computer smaller and to economize electrical consumption, while improving the reliability and capacity of its system. The micro-computer using micro-processor is hailed as the product of the most advanced technology. Thousands of circuits, each being the size of a fountain pen tip, enable a micro-computer to do complicate mathematic calculations in a matter of a second. Specialists predict that it would be possible to produce a toy-sized computer by 2000, whose capacity is comparable to a large IBM computer. The future price of computer will be comparable to the present price of a pocket-type calculator. This calculator which costed $395 in 1971 is now purchasable at $10. In actuality, the price of computer is on a declining trend and it is estimated to equal the price of a toy in 1990.

The utility of computer for education will be examined in consideration of price, size, convenience of handling, relevance to educational objectives and the adequacy of facilities to house it.

Divergent Roles of Computer

Computer, though being of recent origin, sees its usage increasingly diversified and has penetrated into innumerable areas, viz., production, law-enforcement, management, traffic control, weather forecasting, recreation, administration, library service, arts and etc. The principles of computer are employed in watch, radio, automobile, robot and communication network.

Computer is widely employed in education, namely, for salary calculation, processing and storing of transcript and other records, preparing time table and substituting teacher in instructional process. Further, the social role of computer is expected to increase in response to the growing importance of speed, efficiency, reliability and accuracy.

The Role of Computer in Information - centered Society

As Alvin Toffler predicted, the advent of information-centered society is imminent. In the United States, information-related industries employ 50 percent of total workers and produce 50 percent of GNP. The most prominent feature of information-centered' society is the proliferation of information. Total amount of knowledge accumulated since the inception of man's history doubled for a decade from 1960 to 1970. The number of new publications in science and engineering was 3,500 in 1960 and this rose to 17,000 in 1980. As illustrated by these examples, the amount of information produced by mankind is incredible.

Information spawns new information and the combination of new information processing course in commercial high schools and information technology in technical high schools. The time is ripe to consider way to provide a more systematic and effective computer education information will be made possible only through the use of computer.

Information, obtained through analysis of data, helps to eliminate uncertainty in a specific situation. But information is not a valid guide to decision-making. By synthesizing information, knowledge is obtained and this knowledge, after ascertained with regard to its validity, becomes a wisdom guiding decision-making. In this vein, information-processing assumes an enormously important dimension, and the complexity of information processing makes computer a tool not to be dispensed with. Correct judgement and right decision-making are vital for a business firm to survive in the increasingly competitive world.

In the information-centered society, the traditional concept of "know" has changed. The traditional concept of "know" is understood as "having memorized something." In the society innundated by information, it is impossible to memorize all information. The new concept of "know", therefore, has the connotation of "having" a direct access to the reserve of information. The conceptual change of "know" provides clue as to how the school role should change.

Greater Demand for Manpower in Computer Industry

The number of people working for computer industry will increase. U.S. Bureau of Labor Statistics predicts that computer-related occupations will increase in number at a greater speed than in other occupational clusters and that they will gain in popularity well into the 21st century. By the degree of professionality, they cover a wide range of levels, from simple workers to analysists, with widely divergent backgrounds of education and experiences. Particularly, the development of high-level manpower in this field becomes a matter of special attention, due to the unique necessity of being on the rapidly developing frontiers of technology. The development of computer science is adopted as a national policy of top priority in western countries, Japan and Singapore. As a non-polluting industry which does not require much of natural resources, computer industry is welcomed in many countries, particularly in countries unfavorably endowed with natural resources, but abundant in high-level manpower. Computer technology will be the most valid indicator of development and wealth, which distinguishes developed or wealthy countries from underdeveloped or poor countries.

Policy Tasks

Strengthening of Computer Education

In view of the role of education to lead off development in response to new needs, the implementation of computer education is a vital necessity. The necessity of computer education was appreciated in the late 1960's in Korea and its implementation was started with commercial high schools. But it did not reap the expected result, due to the difficulty of securing qualified teachers, the shortage of hardwares and the absence of relevant materials. .

The growing popularization of computer and the development of information industry heighten concern for computer education in a new perspective. This concern was first reflected in the new curriculum effective with 1984, which mandated the establishment of information processing course in commercial high schools and informaation technology in technical high schools. The time is ripe to consider ways to provide a mote systematic and effective computer education in general high schools. Every individual should be able to use computer for one's own needs with necessary knowledge. In the society which sees the explosion of information, the skill and knowledge related to computer constitute the most essential ability as reading and writing do.

The importance of computer education in secondary school is further heightened by the increasing demand for high-level manpower in this field. System analysts, system engineers, hardware engineers, and project managers are produced by higher education. But the success of higher education can not be ensured without a solid academic foundation which is laid in secondary schools. In this sense, educational efforts should be made to provide for the habituation of scientific thinking and logical reasoning as a way of life in earlier stages of development.

High school curriculum gives one unit of computer in mathematics and industrial technology each. As an optional subject for female students, home work takes the place of skill education. Therefore, female students have no access to computer education on the secondary level. As such, general education fails to do justice to computer education. Even the existent contents related to computer are rigidly compartmentalized beyond the bound of coordination across subject matters. They need to be distilled, supplemented and updated under a single purview.

Expansion of Computer Facilities

The programs of computer education in foreign countries deal with the functions of major components, input, processing, output, computer development, operations, system languages, flowchart, programming, computer in daily life and value–related issues. For instructional purposes, these contents are divided into theory and practice, with the latter being specially important. For practice, school should possesses necessary hardwares and softwares.

Most of general high schools and middle schools are equipped with personal computers which have a limited capacity to be used for practice. And the supply of softwares does not meet their demand for practice. There is an urgent need to secure more sophisticated computers which require the use of not only basic language but other languages including FORTRAN, COBOL and PASCAL. They should be secured in a sufficient number, at least 60 per school, so that each is available for a student. In the case of commercial high schools, micro and mini-computers which use different languages should be secured, with more than 20 CRT (cathod ray tube) terminals installed at each school, which enable each student to have access to computer whenever he or she wants to do. They should be familiarized with ways to process, store and retrieve information and manage files.

It is necessary to set up a computer education center in each community, equipped with a high-capacity computer and introduce time sharing system which is linked to schools having personal or micro - computers. This enables the schools to share information, materials, equipment and teacher training facilities.

Teachers Training for Computer Education

Among teachers responsible for computer education, there are a few who specialized in computer as their major. Since computer course was instated in colleges in 1970, 1,000 computer specialists have been produced and the majority of them are employed for more lucrative jobs than teaching. Despite the increasing demand for teachers, it is projected that just a few of those educated in computer will be channeled into teaching.

A short-term training provides an avenue to become a teacher for computer education for those who have majored in other disciplines. This training has been implemented for high school teachers and administrators of municipal and provincial boards of education, excluding primary and middle school teachers. This training reaped a whirlwind of criticism for being oriented toward theory and being far from giving necessary knowledge and skills to teach students in classroom.

Together with the short-term training, a long–term program should be institutionalized to develop the necessary manpower in a longer perspective. It is suggested that computer education course be created in colleges of education and teachers' colleges. An alternative to this is to incorporate two or three subject matters related to computer, which apply to all prospective teachers. Computer education being a new area, necessary qualities of a teacher should be defined, and contents and teaching methods should be developed. These constitutes an area of in-depth inquiry. Further, an incentive scheme should be developed to induce able specialists into teaching.

To support a sustained improvement of teacher's quality, retraining should be an unceasing stream to keep teachers appraised of new frontiers of technology. Some suggest that retraining should be offered as much frequently as possible. But more gravitate toward the desirability of offering it at three year intervals.

Curriculum Operation Committee

The development of computer technology has been breathtaking and this trend will continue into the future. Curriculum which mirrors technological changes should be in an unceasing process of development.

Uniquely, computer education sits astride many disciplines, namely; natural science, engineering, social science and humanities. The basic principles of computer were drawn from mathematics and physics and its operation is based on theories advanced from linguistics and social sciences. Therefore, the change of its curriculum should be kept in view of the changing patterns of other disciplines.

To effect the change of curriculum in a right direction, curriculum operation committee needs to be created, composed of pedagogists, computer specialists, teachers and social scientists. This committee will be vested with basic studies, development and revision of curriculum. Except for those of commercial and technical high schools, there is no standardized curriculum of computer education. Another problems are related to the absence of teacher's guide and the shortage of softwares. In the United States, Canada, and Singapore which lead other countries in computer education, committee like this came into being or plan is promoted to set up one.

3. POPULATION AND ENVIRONMENT EDUCATION

Prospects

Population Growth

Total population in Korea reached 40 million in July 1983, and it is projected to reach 45 million in 1990 and exceed 50 million in 2000. Providing that each family has two children beginning with 1980, total number of population will be 50 millions in 2000, and having three children per family will bring it up to 56 millions. In view of social and economic conditions, birth rate is expected to decline. As the bumper crops of babies born in the early 1960's is reaching fertility ages, population growth will continue, even if birth rate is down 1.0 percent per annum in 2000. This will impose a severe burden for the limited availability of natural resources.

The most significant variable for population growth is birth rate. New value in favor of small-sized family is prevailing, giving a propitious sign of decline in birth rate. But son-preference dominating the value for small-sized family serves as a factor to swell population. Reducing birth rate is vital necessity and value reorientation should be attempted to do away with son-preference. Educational efforts should be made to develop a new population consciousness.

Growth of Elderly Population

Having passed the period which featured high birth and high death rates, Korea is in the stage of high birth and low death rates. The lengthening life expectancy will increase the proportion of elderly population from 3.8 percent to 6.0 percent in 2000, numbering 3 millions. Compared with those of advanced countries, this proportion is rated modest. But the fact that the absolute number of population in this age bracket doubles the present level is eye-opening. The dependency ratio of old population will rise from 6.0 percent to 8.8 percent in 2000. The increased number of aged population suggests that the demand for medical facilities will increase in a geometrical proportion. This trend will give rise to new problems related to dependency, retirement and the utilization of idle labor force.

The increasing proportion of aged population results from reduced birth rates, a phenomenon relative to the reduced number of children in each family. This invites a tendency for aged population to spend little time on the rearing and education of children. With the lengthening of life expectancy, the period of economic dependency on offspring takes one third of entire life. Individual happiness will rest very much on how to chart the utilization of the latter part of one's life. If one is to live a meaningful life in later years, it is necessary to develop economic, physical and intellectual abilities. Educational efforts should be made to serve this purpose. Life–long education should be promoted to enable them to be economically independent and to engage in productive activities, after they retire from active service.

Population Migration

Political, economic and cultural activities centered around cities attract rural people to migrate. Population migration swells the population of cities and this, together with the net increase of population in cities, aggravates the living environment of cities. 1980 saw 57 percent of total population living in cities. In the year 2000, 38 millions, 70 percent of total population, will live in cities, 43 percent of total city dwellers will be concentrated in Seoul and Busan, giving rise to problems associated with housing. As human habitat is expanded, farmland and forest will be eroded. From 1975 to 2001, the demand for farmland will increase by 1.5 times. And those for housing and plant sites will see 1.6-fold and 5.0-fold increases respectively. Conversely, forest will diminish by 80 percent.

Environmental Pollution

Population growth increases the consumption of materials which in turn causes the drain of natural resources. Technological development made mass production possible, with the result of precipitating the escalation of consumption. Mass production piles sewages beyond the capacity of disposal. This, coupled with carbon dioxide belched out by cars and plant chimneys, contaminates air and causes contagious diseases to plague all living things. Water pollution is aggravated by rivers dumping contaminated waters into ocean with the result of destroying resources.

The demand for industrial water rose from 532 million tons in 1968 to 1.9 million tons in 1976. In proportion to the increasing demand for industrial water, sewage will be loaded with greater amount of contaminant. The amount of insecticides used per ha. increased from 5.6g in 1965 to 30.04g in 1975. The increased use of insecticides destroys the equilibrium of eco-system. The development of atomic energy will produce radio-active pollution and advancement of communication technology will give rise to new problems associated with the reaction of chemicals in the air to microwaves.

Drain of Food and Energy

Industrial development, which reached its peak in the last two decades, brought forth a relative shrinkage of agriculture. Population migration toward cities left rural areas with aged people and women. The proportion of women to rural population rose from 38.3 percent in 1963 to 44.6 percent in 1979 and that of aged population from 18.8 percent in 1963 to 31.4 percent in 1979.

As the result of diet improvement, the consumption of meat increased considerably. The ratio of self–sufficiency in food will decline from 59.9 percent in 1979 to 43–52 in 2000. So long as diet self–sufficiency will further decline, there is a need to guide the change of diet habit toward resource - saving pattern.

The supply and consumption of energy underwent remarkable change, as population growth paralleled industrialization. The consumption of energy has increased at the rate of 8.34 percent per annum for the last two decades since 1961. To meet the increasing consumption of energy, the supply of energy will be increasingly dependent on importation, due to the limited availbility of coal. Imported energy accounted for 8.5 percent of total consumption in 1961 and this proportion rose to 51.1 percent in 1971 and again to 72.6 percent in 1979. Providing that reliance on importation increases at this rate, this proportion will rise to over 90 percent in 2000.

Mental Diseases and Sexual Problems

With the development of medical and health sciences, many of contagious diseases have become curable. On the other hand, noncontagious diseases will gain in prevalence. The change of life style, complication of living environment, urbanization and industrialization create a new climate that gives prevalence to mental diseases.

Along with the mergence of nuclear family, aged people are increasingly estranged in the impersonalized urban life. Having lost the haven which used to be found in the company of family members and neighbors, they are exposed to social apathy. In all probability, those plagued by mental diseases will increase in number.

The victims of traffic accidents rose in number, from 3,000 in 1970 to 6,000 in 1980. As more people own cars, traffic accidents will take place with greater frequency. The number of accidentlal incidents in factories nearly tripled over ten years by rising from 37, 752 in 1970 to 113, 375 in 1980. So long as industrialization is continued, it will keep on increasing.

With the influx of alien cultures, the traditional sexual morality is shaken to the root and mass media more often than not become an additional spur to the prevalence of sexual immorality. The youth are exposed to printed materials that stimulate their sexual instinct into unpalatable behaviors. Adults fail to become ethical models for children and value conflict makes it difficult for children to discern good from evil. All of these are one in spawning sexual problems of new dimensions which erode the ethical foundation of the society.

Policy Tasks

Education for Value Reorientation of Population

Traditionally, population has been understood in terms of quantitative concept. "Many people" has been accepted as an individual or social virtue. There is a need for educational efforts to develop an understanding of population in terms of its relation with the quality of life, that is, how population change in size, composition, distribution and migration affects the quality of life at home and in society. It should be brought home that problems do not lie in population growth itself but in the limited availability of natural resources, food, transportation, housing, health, education and social welfare which support it.

50 percent of total population in the world eke out a difficult life on subsistence level. Population problems are appreciated when its phenomena are thought to impede development. Therefore, the awareness of population problems and policy concern vary from country to country. The government sets its eyes on controlling the growth rate and urban concentration of population and effecting qualitative improvement of population. To help these policies reap successful implementation, educational efforts should be made to develop an awareness to guide population behaviors in a desirable direction. Understanding population in terms of its impact on the quality of life helps people to make rational and informed decisions about population behaviors with the sense of responsibility for the consequences of their behaviors.

Environment Education

All living things affect and are affected by the environment and this principle underlies the strengthening of the eco-system. Environmental problems can be considered in terms of environmental destruction, environmental pollution, population, and resources. The naive assumption that natural resources are limitless and production guarantees development leading to higher quality of life has fueled man's drive to conquer the nature, not conscious that it spawns new problems which threat the very existence of human species.

It is crucially important to develop an understanding as to how man's quest for development affects the life of human species and how man interacts with the natural environment. This understanding is attempted in the hope that it will guide development behaviors in the direction that preserves the natural environment and get the best out of it to meet the needs of human beings.

Environmental education goes beyond the purview of school education; nonformal education has more to do with the development of social recognition of environmental problems. Warning against the adverse impact of human acts on the natural environment invites a more cautious approach to developments and deference for the nature. Environmental education should place its point of emphasis on the dignity of human beings and the quality of their life.

Utilization of Female and Aged Population

The utilization of female population is suggested for two reasons. First, there is a tendency among women to stop having children at earliest ages to earn more time to engage in productive works. The period over which women can participate in productive and social works is lengthened. Second, with the improvement of education level, women have a greater potential to contribute to the good of society and nation. Efforts should be made to institutionalize a system which taps both the time and the potential of women. The proportion of female students has increased significantly by accounting for 30–40 percent even in colleges and universities. Most of them are desirous of employment after graduation. Vocational education should be strengthened for female students in school. Subject matters applying to female students should be reformed to accommodate not only contents useful for home affairs but those preparing them for occupational life in the future.

A retraining scheme should be developed to make the best of the aged population for productive works, together with reconsideration of the present retirement system. In non-physical works, they may prove to be more useful than younger workers, particularly in the area of traditional culture and youth guidance. Through participation in meaningful activities, they would be able to get rid of the feeling of being estranged.

Implementation of Effective Sex Education

The traditional ethics which featured a strict stipulation of the relation between male and female have long since disappeared in the contemporary society of Korea. Koreans were traditionally stoical when it came to sex-related matters and this tradition still persists among sizeable proportion of aged people. Among youngsters, sex is no longer social taboo. The climate is ripe to treat sex as a matter of everyday life and to devise an educational program to guide the formation of sexual attitude in a right direction.

Sex education is considered in two dimensions - biological and human. The biological dimension consists of the development of sexual organs, their structure and functions, reproduction, etc. The human dimension refers to ethical and psychological aspects, dealing with the psychology of adolescence, psychological difference between sexes, love, association and role differentiation between sexes, marriage, sexual ethics, and child-rearing. Since the sources of sexual problems are multifarious, the scope of contents should be broad enough to cover all related issues.

The method of teaching in sex education is the subject of in-depth inquiry. The biological aspect should be reinforced by the human aspect, if it is to enhance its effectiveness. Due to the breadth of contents involved, sex education should be understood as human education. The traditional value of "son preference" should be dealt with in the context of role differentiation. Students should be asked to analyze roles of male and female, lest that they should have prejudice against female. The social role of female should be emphasized in relation to the social policies that are promoted by the government.

Education for Preservation and Development of Natural Resources

As industrial development is condemned as a destroyer of natural environment, the government took a series of policy measures in the early 1970's to instill crisis awareness among the people. But these have a limited effect, unless fundamental measure should be taken in the form of educational effort.

Human species destroy the nature but they are capable of building an environment. Korea launched a comprehensive land development project, including the construction of dams and irrigation system, afforestation, land reclamation, river-deepening, farmland formation and road construction. The implementation of these undertakings, unprecedented in scale, changed the map of Korea. Apart from the effort to preserve the natural environment, it is important to have a full understanding of the changing environment in order to guide it in a desirable direction and to effectively adapt to the changing environment. Educational efforts should be made to develop inclination to better the living environment. The sense of frugality should also be developed in relation to the necessity of saving resources.

Population Migration and Policy for Rural Development

Population migration from rural sector overcrowds schools in cities. The shortage of educational facilities remains a chronical problem, though educational tax was created to supplement the expenditure for the construction of classrooms. Relative to urban schools becoming over-sized, population migration left rural schools underscaled. The number of children per class averages 47; in urban primary schools, the number of children per class is over 60, whereas the class size in rural areas is below 40.

This trend caused some schools in remote areas to have part of their facilities under-utilized. If this trend is left to go its way, problem will be more serious. Policy measures should be taken to encourage the decentralization of population, while exploring ways to convert some excess facilities into other uses. They may well be utilized as centers for adult education.

4. EDUCATION FOR GIFTED CHILDREN

Prospects

Growing Concern for Education for Gifted Children

The principle of egalitarianism deepened concern for physically handicapped children due to the existent unequal access to quality education. But education for gifted children has received little attention; standardized programs stifle the earlier eruption of their potential and this makes a deadloss of human resource whose potential might have been turned into a powerful leverage for national development.

According to recent data, there are 420,000 gifted children, accounting for 3 percent of total students in Korea. The breakdowns of gifted children by school level are given below (Table II-34).

Table II–34
Number of Gifted Children by School Level

School level	Total pop. in thousand	Number of gifted children
Pre–school	206.4	70,000
Primary school	5,257.2	180,000
Middle school	2,672.3	80,000
High school	2,013.0	60,000
College & Univ.	1,001.1	30,000
Total	11,150.0	420,000

Source : Korean Educational Development Institute, 1983.

Need for Special Programs for Gifted Children

Education for gifted children is not merely intended to fulfill needs for the growth of individual children; organization of programs need to be promoted in view of the development needs of the nation. Throughout the entire process of education, ranging from selection to placement into advanced programs, education for gifted children is directly linked to the development goals of the nation.

Although Korea is unfavorably endowed with natural resources, it is rich in the human resource with the potential which may turn into a powerful drive force for technology development, if it is fully tapped. In its ceaseless march toward technological society, Korea places premium on the development of human resource and the importance of education for gifted children is highlighted in this context.

Education for gifted children assume greater importance in relation to natural science and technology. Given the fact that it is a thin stream of elites that sharpens the edge of national development and enhance the nation's competitiveness in relation to other countries, the importance of education for gifted children can not be over—emphasized.

International Trend of Education for Gifted Children

Before Soviet Russia launched a Sputnik into space in 1957, education for gifted children, often blamed as the heritage of elite education passed from the feudalistic society, had been relegated to secondary concern amid the rising water of egalitarianism in most European countries. In the United States, education for gifted children was implemented on a small scale in the 1920's and studies have been conducted with regard to program contents, methodology and operation.

The launching of Sputnik shook the complacency of United States over its educational accomplishments and galvanized it into putting more resources into education for gifted children in natural sciences. Coming into the 1970's, Federal Government passed a law providing for an increased support for education for gifted children and state governments followed the suit.

Soviet Russia was more advanced in education for gifted children and programs are more diversified. It gained momentum in Khrushchev's address in 1958 stressing the importance of educating gifted children in separation from normal schools. Schools for gifted children mushroomed therefrom which specialized in one of mathematics, physics, music and athletics. These programs are intended to provide for a systematic discovery of youngsters with potentials and earlier eruption of them leading to the fullest stretching of them. India runs state-financed programs for youngsters who have domonstrated scientific talent. In general, education for gifted children is the responsibility of research institute in the respective field and there are several schools which are set up with the mission of educating youngsters in specific fields. In the latter case, residential program dominate. Israel is active in education for gifted children. In 1971 a division was set up within the Department of Education, which is exclusively responsible for education for gifted children. Research institutes offer a highly-tailored program organized around the expressed needs of individual learners. Besides, there are ten schools for gifted children in the age bracket of 5–16. A standardized examination is administered nationwide by research institutes and the schools to discover youngsters with academic talent. Educational program places point of emphasis on inculcating creativity among youngsters. They are not limited to natural sciences and technology; anthropology and social sciences are among the major disciplines dealt with in education for gifted children. As noticed from these specific instances in various countries, the worldwide trend is that gifted children are discovered at the national level and that the state is responsible for the financing of education for gifted children.

Policy Tasks

Social Recognition of Education for Gifted Children

The under-development of education for gifted children has much to do with the lack of understanding of it, which leads to insufficient support. Therefore, any attempt to develop it should begin with promoting the social recognition of it. The informational activities should include the following. First, informational activities should be directed to help the public to understand that gifted children are hidden in ordinary children. Failure to take note of this fact amounts to letting them be buried in dust, denied exposure to light and this is a great loss to the nation. Second, it is important to introduce specific cases in foreign countries where education for gifted children is underscored at the national level. It should be brought home that a thin stream of elites provides vitality to technological development in the age when man ventures into space. It is in this vein that the science high school was established. Third, the public should gain the understanding that the purpose of education for gifted children is to stretch the potential of gifted children to the fullest measure and to develop confidence in one's ability to grow. It is necessary, therefore, to create conditions for individuals to stretch their potential to the extent that brings them to the priviledged fold of elites. Fourth, it should be brought home that the thin stream of elites is the prime mover of industrial development at home and enhances the image of Korean people as perceived by foreigners.

Teacher Preparation and Training

How to prepare teachers to educate gifted children becomes a matter of special concern. Once they have been licensed for teaching, another concern will be with how to upgrade their quality in the presence of ever-advancing technology. Coming to the forefront of thinking about teacher preparation and training is the mandate that the teachers to educate gifted children should be distinguished from other teachers. The high standard of their quality holds important implications for what teacher preparation and training system should be like. The fact remains clear that teacher preparation course be created within graduate school, either as a separate course or as one integrated into the existent course.

Education for gifted children will place premium on the secondary level by the 2000 and teachers should be well grounded in the subject matters of secondary schools. It is suggested that prospective teachers opt for other subject matters than pedagogy in the undergraduate program and have in-depth theoretical study about education for gifted children on the graduate level.

In-service training should be designed not only to upgrade the quality of teachers responsible for education for gifted children but to help other teachers be adequately grounded in the characteristics and identification of gifted children and general principles of teaching. The latter case leaves more room for the flexibility of programs.

Supporting System for Education for Gifted Children

Due to the uniqueness of education for gifted children, it is essential to ensure that teacher be given a full degree of autonomy whereby he or she determines academic matters related to selection, early graduation and the kinds of programs This requires that the traditional pattern of administrative system be changed.

The selection of gifted children should be entrusted to a special committee composed of professionals under the auspices of municipal or provincial board of education. With regard to the organization of program contents, grouping of learners, accelerated advance to higher grade and evaluation, teacher should enjoy a full degree of autonomy. Granting a full degree of autonomy may drive education for gifted children into a water-tight compartment separate from general education. There is a need to maintain a mechanism to coordinate with other schools. Education for gifted children requires a greater share of resources and efforts should be made to secure necessary resources.

Diversification of Instructional Materials and Media

Education for gifted children defies a stereo-type approach using standardized programs. The diversity of educational needs requires that instructional materials and media be diversified. The diversification of instructional materials and media can be considered in two dimensions. First, education for gifted children includes a wide variety of programs and instructional materials and media should be developed, taking account of their relevance to each program. The same can be said of physical facilities.

3

DEVELOPMENT OF SUPPORTING SYSTEM AND POLICY TASKS

I

REFORM OF EDUCATIONAL SYSTEM

The present educational system, marked by rigidity can not meet educational needs which are diversified with social transformation. Educational systems face new challenges which call for an inevitable transition from institutional rigidity to flexibility, and this is a global trend triggered by the new concept of life-long education. The lofty goal of "self-realization" is accomplished by educational efforts continued beyond the purview of schooling. The mandate of accomplishing these goals require that school be bound up with home and society in a mutually complementary relation. Education at home and by society itself assumes an increasingly important dimension.

To respond to new needs, educational system should undergo a structural change, which highlights establishment of life-long educational system. reform of school system, strengthening of education at home, development of private schools and expansion of social education.

1. ESTABLISHMENT OF LIFE-LONG EDUCATION SYSTEM

Prospects

Global Trend

A new wave of educational innovations is sweeping the world of today. The new publication "Nation at Risk" shook the complacency of the United States over its educational accomplishments and stirred it to all-out effort for massive reform of education. In Japan, Prime Minister affirmed the renewed commitment of the government to educational reforms on an unprecedented scale. Many other countries follow this suit. Since 1950, the necessity of educational reform has been appreciated by many countries. International organizations—such as UNESCO, International Education Association, World Bank, etc., echoed the same outcry. What is common about their assertions is that school education has reached limit in serving new functions. Much of the reform efforts are directed toward the establishment of life-long education. We are in the beginning of a series of reforms, more yet to come in the 2000's. The global trend confronts Korea with new challenges. Educational reform that we foresee is awesome in magnitude, which cries for all-out efforts of people.

Limitation of School-centered System

The school has received lime light as the prime personae on the educational stage. The increasing demand for education brought many schools into being and caused the existent ones to become unmanageably larger. With the primary concern for schooling, non-school organizations were condemned to oblivion. The quantitative expansion of schools was impressive; following primary education, secondary education has been popularized and higher education is on the threshold of this stage. In the proportion of higher education population to total population, Korea leads England, France, and West Germany.

Despite the phenomenal growth of schools, the demand for education has not been met and the gap is notably larger in higher education. Larger proportions of college graduates advance to graduate schools and there is a tremendous pressure for increased enrollment in kindergartens. This trend is expected to result in over-education of people as the United States is presently experiencing. The institutionalized organizations typically represented by school have long since monopoly on education. Education that takes place outside school is more diverse and flexible and this merit point induces more people to non-school education, as indicated by the mushrooming of non-school organizations which engage in cultural and educational activities. Departure from rigid adherence to schools is imminent and urgent.

Higher Expectation on Life-long Education

Article 29 of Constitution of the Fifth Republic holds the government responsible for the promotion of life-long education. The importance of life-long education is recognized by all countries but none of them includes the provision of life-long education in the Constitution with the exception of Korea.

Although life-long education is stipulated in the Constitution, its concept has not been defined clear enough to suggest clue regarding how we should go about it. In order for it to be institutionalized, there are steps to be taken starting with the revision of legal provisions related to education and realignment of administrative structure. Since the connotation of social education is highly pervasive, the law governing social education should be such that provides effective linkage among various kinds of education related to occupation, home, family planning, etc. Binding them in an organic relation helps to increase the effect of education and minimize the waste of resources.

Another problem of social education is related to administrative structure. While the Ministry of Education is exclusively responsible for school education, social education is split among different ministries without any mechanism responsible for overall planning and coordination. Steps should be taken to enact the law of social education and to realign administrative structure.

Policy Tasks

Reform of Educational System

The first task to be undertaken in preparation for the 2000's is to reform educational system so that it supports the realization of life-long education. This reform amounts to create a climate which shifts focus from school education to home and social education. Educational development is very much dependent on striking balance among different areas of education. Home, school and society are functionally dependent on one another; home plays more vital role in the formation of character and attitude, and society finds its role in helping its members to acquire necessary knowledge and skills that enrich their life. Sandwiched between the two, school is responsible to develop basic skills and abilities to continue learning. The reform of school education should be based on the premise that it plays these roles.

The concept of life-long education gives new definition to the subjective entity of education. The government played leadership role in the development of school into an institutional organization and, therefore, it has been taken for the subjective entity of education. The centralization of administration empowers the central government to control and interfere with educational efforts of schools. As such, the unproportionately strong leverage of government characterized the administration of Korean education. Under life-long education system, each learner is given a wider range of educational choices. In school, learners are children, as contrasted with adults in social education. It goes without saying that adults have voice in the choice of educational programs. Their voice is extended to the right to determine educational programs for their children. In this sense, all peoples are the subjects of education and this is a characteristic of life-long education. The role of education is to do away with hindrances to learners to free choice of educational programs and to ensure equal access to quality education for culturally and economically deprived learners. In other words, it becomes the guardian for free choice and the supporter for handicapped learners.

What is implicated by the new role of school education viewed in the context of life-long education is that the present educational system should undergo fundamental change. It calls for not only institutional change but operational change. Due to the complexity of change, it can't be done over a few years; it should be the fruit of evolutionary change. Educational commission may well be instated, composed of people representing all walks of life, to ensure the depth and breadth of discussion on educational matters.

Society as the Field of Learning

Another important task is to eliminate non-educational factors in society and to strengthen the educational role of society in view of new educational challenges. To make the society in its totality an educational climate goes beyond the realm of education; this task can not be accomplished by any effort short of all-out commitment of people.

There is a compelling need to organize a volunteer body in each community to stamp out non-educational factors and build an educational climate. In large cities, mothers volunteer to escort children through traffic congestion to schools. There are other volunteer groups in the regional communities and they should be incorporated into a system which serves educational needs of the community. For example, a community appoints a chief at the suggestion of school principals and he is vested with youth guidance for the community. His opinions are sought by teachers and parents in their efforts to provide effective guidance. In each district, youth guidance committee is organized to seek to prevent juvenile crime and provide educational programs to instill moral consciousness. Still the operation of the committee is much dependent on the leadership of the government. Efforts should be made to encourage leadership at the grassroot level.

Community Education Board is another example of volunteer organization, which plays a wide range of educational roles. It is necessary to institutionalize functional division with school, whereby the former is responsible for character-building and the latter for cognitive learning. Adults should be character and role models for youngsters. Therefore, the point of emphasis is on "what kinds of contact the society has in store for children?" "How to make society educationally healthy" is what adult education is all about. It is eventually at the hands of adults that the society is turned into classroom full of materials to be learned. Adult education is not only to acquire new knowledge and skills through programs offered by an institution but to strive for self-improvement. Adult education is not a new addition separated from school education but simply the other side of coin. The development of social education should be promoted within the context of an integrated whole.

Linkage between Formal Education and Nonformal Education

The linkage between formal and nonformal education will be strengthened by ensuring synchronization of contents between the two and giving flexibility to operation. Skill training which an employee received within an industrial firm should be reflected in the credit requiement, when he advances to technical college. The training of specific skills in technical high school may well be relegated to industrial firms. It is desirable to take account of industrial experience in the entrance examination to college or university. This proposal merits special attention, for it provides another avenue to higher education amid the prevailing recognition that the completion of high school gives the sole avenue to higher education. At present, the so-called "college entrance qualifying examination" is administered for those who have not completed high school education. Though it is intended to screen applicants qualified to continue higher education, it concerns school education to the virtual exclusion of industrial experiences. This examination does more to sever the linkage between formal and nonformal organizations. Industrial or other experiences are simply condemned as "deal loss."

For the convenience of explanation, nonformal education is treated in separation from formal education. In reality, however, this dichotomy is not desirable. These two constitute the end of continum on which numerous kinds of education exist. Special classes attached to industrial firms, air/correspondence schools and open university stand out between formal and nonformal education. These programs are offered by formal education institutes but the way in which they are offered is a significant departure from the conventional way marked by rigidity. They intake clientele who might have been relegated to social organizations, if it had not been for such formal institutes. The significance of these programs lies in that they serve as the bridge linking the two ends of the continum. In this sense, there is a need to expand opportunities for these programs.

Reform of Education Law and Administrative System

The present education law is predicated on the premise that school is the sole institution of education. This law causes a tendency to belittle the educational role of non-school organizations. The Ministry of Education catered its administrative structure to the needs of formal educational institutes. This school-centered administration hardly gives an opportunity to be concerned with social education.

The recent enactment of nonformal education law is welcomed as a new benchmark in the annal of educational development. This is not that law pertaining to nonformal education had not existed before the promulgation nonformal education law. There had been laws governing agricultural skill training, fishery skill training, and occupational training, which had been under the jurisdiction of different ministries. Nonformal education is the responsibility of other ministries, while the Ministry of Education is responsible for formal education. There was no legal base for planning and coordinating nonformal education programs under a single purview. What is acutely needed is the basic law which governs all educational activities in a systematic and consistent fashion. This law defines home education, formal education, and nonformal education and sets up an operational system which binds them in a mutually reinforcing relation. This should stipulate the roles of government and local autonomy authorities of ensure learners of the right to free choice of programs and provide a mechanism which ensures effective coordination among the ministries concerned with nonformal education programs. The role of government and local authorities is limited to guard against detrimental factors to education and encourage the educational undertaking of social organizations.

2. STRENGTHENING OF EDUCATION IN HOME

Prospects

Loss of Traditional Role in Home for Education

Home is the place where children encounter the first educational experiences. The importance of education in home is heightened by the fact that learning ability and intellectual development are influenced by the quality of education in home. The influence of in home education in home goes beyond pre-school age, since it lays the foundation for the formation of character and attitude and intellectual development and sets the direction of socialization.

Traditionally, Koean home is known for being active in educational role. The partiarchal system of family held parents responsible for education for children and Confucian dogma stressed ethical norms at the earlier stage of growth. The eldest son, as the heir of family, was sensitized to responsibility for the well-being and success of other family members. In the case of girls, education in home assumed more important dimension, since the majority of them were not allowed to continue modern school. Education in home for girls was geared to ethical norms and behavioral codes.

With the emergence of modern schools, education in home was shrank considerably. The advent of nuclear family reduced the number of family members and this deprived home of its educational role. Industrial development, coupled with the diversification of occupation, hardly gives father the time to contact children at home. The same trend is notice among mothers with the increasing tendency to engage in occupations. The diminishing contact with children is the first reason for home being stripped of educational role.

Lack of Parents' Role Performance in Education

Another reason for the diminishing role of home in education is that both father and mother fail to be a role model for children to pattern after. This problem is further traceable to the fact that parents were not educated about their roles, as contrasted with the past practice of educating girls to acquire the qualities of a good mother and wife. The extended family itself was the field of learning where children witnessed how their parents and brothers educated offsprings. They were implicitly taught about roles of family members. Learning was continued even after they were married, since grand-parents continued to be role models. Today, home no longer plays the educational role that it used to do.

Increase of Juvenile Problems

The weakening of educational role played by home causes new problems. Many of juvenile problems are traceable to this. When the family is torn by internal conflict between members, children are more likely to indulge in erratic behaviors. The apathy of parents toward children produces problematic children.

According to a study, repressive control of parents, the lack of congeniality within family, conflict between the couple and biased love of parents for a child were reported to have much to do with problematic children. Much of juvenile problems are traceable to the familial problems.

Policy Tasks

Social Movement for the Restoration of Education Role in Home

Confronted with the necessity of restoring the educational role of home, social movement is much in order. There had been scattered movements under the catchwords of "with the family for weekend," "more communications with children", etc. But these movement, attempted on a one-shot basis, failed to reap tangible effect.

The social movement should comprise a wide variety of activities, including the following, namely; publicity to the importance of education, in home, introduction to the traditional role of Korean family in education, relation between juvenile crime and family education, publication of booklets, citation of model home, camping/outint, communication with children, observing, home events to commemorate the adult day and diary writing. In order for social movement to be more meaningful, it should be the joint venture of home, school, social organizations and mass communication.

Strengthening Education for Parents

In the nuclear family, it is hardly possible to prepare children for the role of parents. With grandparents long since disappeared from family, there is no one to take the place of teacher. The loss of neighborhood makes it difficult to draw on the services of neighbor adults. Parents not experienced with educational role are left alone holding the educational responsibility for children. So far as educatin in home is concerned, they go through the process of trial and error.

In view of home deprived of its educational role, education for parents should be the collaborative attempt of school and social organization. School should extend the existent contents of population and sex education to cover marriage, fertility and child rearing in the curriculum of middle school. The optional subject "education" in high school should be made an essential subject which all students are required to take. "Child rearing" and "education for children," which are the favorite subjects of girl's high school, should be developed to have universal application. The nonformal education law provides that all nonformal education programs include a fixed proportion of general subjects and these leave ample room for the infusion of education-related contents for parents. The importance of parent education is high–lighted by the practice in foreign countries of providing education or booklets at the time of issuing marriage permit.

Educational Support for Needy Students

Not all of families locked to poverty can afford to pay attention to home education. But it is apparent that economic plight, coupled with the little education of parents and uneducative environment, turns home into an arid soil. Some families can't afford to give children even elementary education which is free and compulsory.

It behooves the government to formulate policy measures to support the economically deprived families. The government has budgeted to provide them with subsidy for engaging in productive activities and favors in medical treatment. But the government subsidy for education has not been realized. Rather, foreign donors have been more generous to support education of needy families. The withdrawal of foreign assistance from Korea left vacuum to be filled out by domestic capital. It is urgent that necessary policy measures be taken to support needy families in their educational efforts. The support may take various forms, viz., provision of scholarship or subsidy, production and dissemination of materials, etc. In gaining admission to child centres, children from needy families should be given higher priority.

3. REFORM OF SCHOOL SYSTEM

Prospects

Diversified Expectations of Education

The universalization of school education precipitated the change of learners' group, from homogeneous to heterogeneous group. This means that the social and economic backgrounds of learners have been diversified. Along with this, what the learners expect of education are diversified.

In the past, the learners' group featured the homogeneity of their socio-economic backgrounds. This reflects the simplicity of the past society as well as the selective intake of students to schools. Coming to the present turbulent society, social structure is increasingly complicated, giving variety to the socio-economic status of people. The learner's expectations of education mirror their socio-economic status. Hence, what they expect of education are diversified, requiring that educational contents and methods should also be diversified. With the present educational system marked by stereotype and rigid operation, it is impossible to meet the diversified expectations of education.

In the advanced countries, a variety of school systems have been developed and are tried out. In Korea, remote learning system, sandwich program, seasonal school, on-the-job training, free choice of program which allows students to transfer between schools, creditation of adult education, etc. have been introduced.

Extension of School Years

Since the conclusion of World War II, all countries have extended school years and compulsory education was lengthened to 10 years in many countries. The United States, United Kingdom, France and

West Germany led other countries in the extension of elementary education to more than 10 years. There are other many countries which offer nine years of compulsory education. Korea is now planning on to extend the present six years of compulsory education to nine years (Table III-1) .

Table III–1
Years of Compulsory Education

Countries	Years of Compulsory Education	Age range	Remarks
U.K.	11	5–16	Primary 6, secondary 5
France	10	6–16	Primary 5, secondary 4
W. Germany	9–10	6–15	Basic 4, secondary 5–6
Sweden		7–16	Lower, middle and upper Level, each three years
U.S.A	12	6–18	Primary 0–8, secondary 4–6
Japan	9	6–14	Primary 6, secondary 3
Taiwan	9	6–14	Primary 6, secondary 3

Source : Japan Ministry of Education , *International Comparison of Education*, 1980.

The lengthening of school years is made possible not only by extending school years upward but by advancing the age of entrance to school. In France, U.S.A. and Japan, enrollment ratio of five-year old children is 100 percent, 82 percent and 70 percent respectively. The enrollment ratio of children at this level in Korea is 13 percent, way behind the advanced countries in the enrollment ratio of preschool aged children.

Change of Secondary and Higher Education

The startling expansion of schools and universities also changed the quality of education. The quantitative expansion was most phenomenal in high school and college in the 1970's and this growth was accompanied by qualitative change. As of 1983, 78 percent of high school aged population are enrolled. The enrollment ratio at college level is 28 percent. But high school graduates advancing to college and universities account for 61 percent. The high school education had been popularized and this wave is reaching higher education.

The stream of pupils is split at high school into general and vocational education, as indicated by general high school and vocationl high school. The former prepares students for entrance to colleges and universities and the latter imparts knowledge and skills needed to engage in productive works. Now that 60 percent of high school graduates are advancing to colleges and universities, vocational education is jeopardized due to the lack of recognition; vocational high schools are taken for a receptacle to receive inferior students.

Higher education is no longer regarded as an ivory tower inhabited by the priviledged fold of elites. Elite education is being submerged by the rising water of universalization. This trend makes it inevitable to divide higher education into academic and professional orientation. The former leads to graduate studies, whereas the latter educates students bound to job market. The expansion of colleges and universities brings new graduate schools into being. The graduate school is no longer an academic enclave exclusively obssessed with scientitic research. At the professionality of occupation is heightened, graduate studies are beginning to take professional tone; larger number of graduates are bond to job market. As such, the quantitative expansion of colleges and universities give new characteristics to educational programs. .

Policy Tasks

Diversification of Schools

As high schools are diversified in kind, it is convenient to classify them into general and special high schools. General and vocational high schools belong to the former and the latter includes arts high school, athletic high school, school for gifted children and special school for handicapped children. While the former serves regular students, the latter is distinguished by specific goals or specific target groups. There are many general schools yet to be converted into special schools. Some will have to be converted into comprehensive high schools which are known for the combination of general and vocational streams. The former should have its quality upgraded, if it is to serve students bound to higher education. Since the latter should retain vocational orientation, linkage with industrial firms is considered a key factor to determine the quality of education.

The special school is known for flexible operation depending on the needs of clientele. Flexibility extends to selection of students, graduation requirement, qualification requirement of teachers and curriculum. The school for gifted children, for example, is characterized by high standards of curriculum and equipment. To retain the academic excellence of program, it necessitates the participation of colleges.

Higher education institutes are also classified into academic orientation and professional orientation. These two are differentiated by curriculum, facilities/equipment criteria, qualification requirement of teachers, etc. The diversification of institutes in kind should be accompanied by a commensurate increase in operational flexibility. Greater emphasis on quality control calls for so much flexibility in entrance, graduation and duration of study. There is no need to specify the time of entrance and the duration of program. Operational flexibility requires that new sets of criteria be developed to guide operation. The criteria may vary with the unique needs of clientele even within the same course.

Extension of Compulsory Education

There is no need to reiterate the importance of compulsory education. In view of new challenges looming over the horizon, it is urgent to extend the present six-year compulsory education to nine years. The compulsory education should be made free. Therefore, the extension of compulsory education depends on whether it is possible to finance it.

The extension of compulsory education requires an enormous amount of financial input, though compulsory education is not free. There are many schools to be brought into being especially in remote and outlying areas. Special schools should be erected to serve handicapped children.

Debate has been warming up over whether the extension of compulsory education should be postponed, if it can't be made free. Some argued for the extension of compulsory education, with free education to be realized later on piecemeal basis. But this argument is groundless, considering that 96 percent of population in the respective age bracket are enrolled on the lower secondary level. Enrollmentwise, education up to grade nine has already been popularized. Given the double imperatives – compulsory education and free education, the former has been accomplished. We better set our eyes on the realization of the latter.

Should it be financially impracticable to provide free education, postponing the extension of compulsory education will give us a breathing spill to divert resources to 4 percent of non-schooled population. More schools may well be built in remote and outlying areas. Free education may begin with needy families and spread across the country on an incremental basis.

Expansion of Pre-school Education

13 percent of children aged from 4 to 5 have access to pre-school education in Korea. This proportion is much smaller than of European countries and Japan. The expansion of pre - school enrollment is among the national policies of top priority.

Table III–2
Enrollment Ratios in Various Countries

Countries	Years	Relevant ages	Enrollment ratio (%)
Korea	1983	4–5	12.9
Japan	1981	3–5	42.5
U.S.A	1979	3–5	51.1
U.K.	1979	3–5	23.2
France	1979	3–5	97.8
W. Germany	1979	3–5	77.4

Source : Japanese Ministry of Education, *International Comparison of Educational Indices*, 1982.

The expansion of pre-school enrollment is considered not as the substitute for home education but as a supplement to it. Remote and outlying areas should be the first to benefit from free access to pre-school education. The expansion of pre-school enrollment also requires an enormous amount of financial input. It would be impossible for the Ministry of Education to meet the financial need. Arrangement should be made for the sharing of additional expenditure between the Ministry of Education, the Ministry of Home Affairs and the Ministry of Health and Social Affairs. At present, the Ministry of Education budgets for support for pre-school education in connection with New Village Movement. The effect of this financial input will be heightened, if it is matched by the fund from the Ministry of Education. Coordination between the concerned ministries will give consistency to policy measures for the expansion of pre-school enrollment. Free education should be provided on a selective basis in the perspective of long–term goal to implement it across the nation.

Qualitative Improvement of High School Education

The functions of high school education need to be examined in the context of reforming school system. The high school programs are geared to preparation for entrance examination to colleges. A question is raised as to whether the role of high school should remain linked to entrance examination or not. Answer to this question should be sought in relation to the goal of higher education. If higher education were intended to perpetuate scholastic excellence by making it accessible by a few elites, high school should keep the quality of its programs high for selected few. If higher education were oriented toward vocational preparation, high school should reform its program in a way that ensures its relevance to industrial needs.

Some high schools within a community may be merged into an integrated high school. But merging of high schools should be made on a selective basis. The community which defies the establishment of several high schools or sees a wide gap of education quality between the existent high schools provides a suitable environment for the establishment of an integrated high school. In the integrated high school, academic program parallels vocational program and students are allowed to transfer between the two. Those who drop from the academic program have only to earn the required credits of vocational subjects for graduation. Vocational stream needs to be effectively linked to industrial firms, whereby shop practice is entrusted to factories and industrial experience save student workers shop practice in school.

Vocational program will be diversified and flexible. Special classes within industrial firms, air/correspondence courses and open university will further be expanded, while encouragement and support will be given to enterpreneurs establishing vocational high schools. There will be more special schools to be established to serve specific needs of clientele and these schools will be known for flexible mode of operation.

Each district might consist of several integrated clusters (C1 – C9), each having an assortment of academic and vocational high schools (see Diagram III-1). But the clusters don't have to be uniform in structure and size, because they must reflect local characteristics. The vocational high schools within the cluster serve as vocational training centers (V1–V4). Application for entrance to high school is filed with the cluster, the so-called mother school, and not with individuals high schools.

The first graders (10th grade) would be exposed to the common sub-

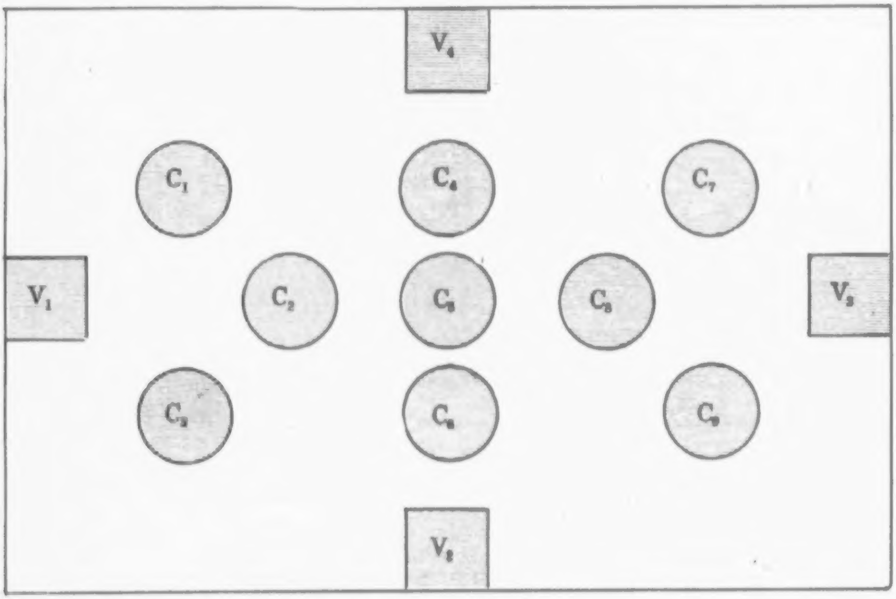

Diagram III-1 Integrated High School Cluster

jects of high school education and intensive guidance concerning their future careers. During the first semester of grade 2 (11th grade), students are channeled into different programs on the basis of aptitudes are allowed to shift to another as need arises.

Qualitative Improvement of higher Education

Higher education in Korea saw phenomenal growth in quantitative terms in the 1970's. As seen in Table III-3 enrollment ratio of higher education in Korea has come close to those of advanced countries. The startling quantitative growth of higher education did not bring with it a commensurate improvement of quality. Rather educational conditions drifted into worse: teacher–student ratio rose; library capacity remained unchanged in the face of growing number of students; and education expenditure per student dropped.

Table III–3
Enrollment Ratios in Higher Education

Countries	Years	Relevant ages	Enrollment ratio
Korea	1982	20–24	24.3
Japan	1981	20–24	30.2
U.S.A	1979	20–24	58.0
England	1979	20–24	20.1
France	1979	20–24	25.5
W. Germany	1979	20–24	27.6

Source : UNESCO, *Statistical Yearbook*, 1983.

Having gone through the period of pheonmenal growth in quantum, it is time to intensify efforts to improve the quality of higher education up to the standard of advanced countries. The quality of higher education can be enhanced by encouraging competition among colleges and universities. Competition will stimulate inferior institutes to greater effort for qualitative improvement. Higher education policy in the past featured paternalistic care for under-scaled, inferior institutes. The changed context of society makes paternalistic care an impediment to qualitative improvement. Quality gap among institutions should be brought to the fore and the watchful eyes of the public will galvanize inferior universities to greater effort for qualitative improvement.

The need for quality control is most acutely appreciated by graduate schools. As the number of graduate students increases, there arises a need for a dramatic students increase, there arises a need for a dramatic change of program and operational mode. Approval for the opening of graduate programs should follow a thorough review on the basis of valid criteria. The importance of higher and graduate education is heightened by the increasing demand for high-level manpower in the face of ever-escalating competition with other countries. The necessity of reducing reliance on foreign institutes for the development of high level manpower also give urgency to the development of graduate education. We should notice that Japan has long since attained to self-sufficiency in the development of high-level manpower. It is impossible to raise all higher education institutes to the standard of advanced countries. A tactical approach to this task may provide intensive support for the selected few with greater emphasis on graduate studies.

It may be wise to divide higher education institutes into two categories—academic orientation and professional orientation. They should be differentiated in selection and operational modes. Since the former intakes students with scholastic talent, admission to it will be very competitive. In contrast, the latter, due to its program of professional orientation, is easily accessible by larger number of applicants. Since it is targeted for the graduates of vocational high schools and employed workers, programs should be divergent enough to meet the varying needs to meet the varying needs of learners. It is essential that such programs maintain a cooperative relation with industrial firms. Quality control is less appreciated in vocational program.

From Quantitative to Qualitative Selection

The selection of students is considered in two ways, namely; quantitative selection and qualitative selection. The former begins with the determination of places and select students in the number to fill out the places. The latter consists of determining selection criteria and selecting only those who meet the criteria. Quantitative selection has dominated educational scene in Korea. Resort was once taken to qualitative selection, when national examination was instated to qualify college graduates for bachelor degree in the early 1960's. But this system was short-lived. Coming into the 1970's, national examination was again instated to delete those unfit to continue higher education. This examination was a significant departure from the conventional one in that it set up the minimum passing line. Even this system has changed over years to become an entirely different process, as we see it today. Still, quantitative selection holds away over educational evaluation.

Since primary and lower secondary education has been universalized, selection does not apply to these levels. It is the high school level and above that selection becomes the target of major concern, because selection has much to do with education quality. Developing a new selection mechanism is the key factor to determine the quality of education on the upper secondary and higher education levels.

The present quantitative selection becomes a drag on the qualitative improvement of higher education. It may be extended to paternalistic care for inferior institutes with possible result that they are deprived of energy for self–development. The quantitative selection is also far from stimulating inferior institutes to compete with other universities. The practice of grading a learner relative to others is another impediment to qualitative improvement.

The discussion on screening process in relation to education quality boils down to stress the importance of changing the national examination system for entrance to college. This examination should be reduced to the one for qualifying high school students for graduation. Entrance examination should be left to the discretion of each college or university. Another examination might as well be institutionalized to qualify college graduates for bachelor's degree and the responsibility of its development and administration should be passed on to "higher education council." All in all, there are basically three layers of screening mesh, consisting of qualification examination for high school graduation and examination for bachelor's degree. This system commends itself for linking upper secondary and higher education in the attempt to improve the quality of education.

4. SUPPORT FOR PRIVATE SCHOOLS

Prospects

Continual Reliance on Private Schools

Heavy reliance on private schools is indicated by the sizeable proportion of total enrollment which they take. According to 1983's data, the proportions of enrollment in private schools are 55.5 percent in kindergartens, 1.4 percent in primary schools, 34.5 percent in middle schools, 59.5 percent in high schools and 75.1 percent in colleges and universities. Except for primary schools, private schools bear the major brunt of education (Table III-4).

Table III–4
Dependence Ratios on Private Education

(%)

Countries	Year	Primary Education	Secondary Education	Higher Education
Korea	1983	1.4	34.5 (Middle) 59.5 (High)	75.4
Japan	1982	0.5	27.7	73.7
U.S.A.	1976	12.5	7.3	21.4
France	1976	5.8	19.9	4.9
Taiwan	1982	1.1	18.9	64.2

Source : 1) MOE, *Statistical Yearbook of Education*, 1983.
2) UNESCO, Statistical Yearbook, 1983.

In the United States where private schools were the cradle of education, the enrollment of private schools account for 12.5 percent in primary schools, 7.3 percent in secondary schools, 21.4 percent in colleges and universities. In Taiwan, the proportions are 1.1 percent in primary schools and 18.9 percent in secondary schools. In France, they are 5.8 percent and 19.9 percent respectively. In Japan, they are 27.7 percent in secondary schools and 73.7 percent in secondary schools and 73.7 percent in high schools. Reliance on private education is greater in Korea than other countries, notably in secondary schools and above (Table III-5).

Table III–5
Percentage of Students Enrolled in Private Schools (%)

School level	1983	1986	1991	1996	2001
Kindergarten	55.1	65.2	72.3	73.9	75.0
Primary School	1.4	1.4	1.4	1.4	1.4
Middle School	34.5	31.5	26.5	22.6	16.5
High School	59.5	57.9	55.3	52.6	50.0
College & University	75.1	75.1	75.1	74.9	75.0

Heavier reliance on private education is illustrated by the distribution of resources. As of 1980, total value of properties owned by private schools is 1,600 billion won (US$1,8 billion)which is 14.5 times the budget of the Ministry of Education. The proportions of educational expenditure on private schools are 30 percent in middle school, 50 percent in high school, and 75 percent in college and universities.

By the year 2000, the proportion of private middle schools and private high schools will be down to 16.5 percent and 50 percent respectively. By contrast, private kindergarten will increase in number to account for 75 percent. Despite the change of proportion, still private schools will assume a sizeable proportion of total enrollment.

Insufficient Financing

The insufficient finanicing of private schools is traceable to the source of finance. Although total value of properties owned by private schools is enormous, 64 percent of them is land which yields little profit. Tuition and fees constitute the lion's share of total revenue, accounting for 77 percent in middle schools, 90 percent in high schools and 81 percent in colleges and universities.

On the expenditure side, salaries are the largest single item accounting for 70 percent in private middle and high schools and 50 percen in

Table III–6
Percentage of Educational Resources Devoted to Private Education (1983)

(%)

School level	Total Value (Billion won)	Tuition	Transfer & Subsidy	Loan	Others
Primary school	13	68.3	28.6	0.2	2.9
Middle school	171	77.3	18.1	2.9	1.7
High school	335	89.2	5.6	0.4	4.8
Col. & Univ.	758	80.5	7.6	4.6	7.3
Total	1,277	82.3	8.7	3.2	5.8

private colleges and universities. Despite the deteriorating financial status of private schools, government subsidy remains in a negligible proportion. The implementation of the policy mandating an equalization of high schools obligated the government to provide subsidy or both salaries and facilities. In reality, however, the government subsidy is limited to salaries. The educational expenditure per pupil in private schools is much lower than that of public school, and this gap is also indicative of quality gap between private and public schools.

Table III–7
Comparison of Education Cost Per Pupil between Public and Private Schools (1983)

School level	National/Public (A)	Private (B)	B/A (%)
Primary School	253.7	263.4	103.8
Middle School	267.8	224.7	83.9
High School	422.9	344.3	81.4
Jr. College	1,365.7	828.3	60.7
Col. & Univ.	1,370.6	1,264.5	92.3

Autonomy of Private Education

The advantage of private education lies in the fact that private schools enjoy higher degree of autonomy than public schools. In reality, however, private schools have long since been deprived of autonomy; they are no longer able to determine tuition and the latitude of principal is limited by a fixed period of term. The Ministry of Education and municipal and provincial boards of education are empowered to approve or cancel the nomination of the board of trustee members and the establishment of schools. Private schools are mandated to follow the guidelines of budgeting set by the administrative authorities. Approval should be obtained even for the disposal of properties.

Private schools will be relieved of control and supervision and given autonomy, whereby they can rationalize management, develop self-governing capability and enhance accountability to the public. Having their accountability heightened is a way to reduce government control and increase autonomy. It should be borne in mind that the increasing autonomy does not necessarily mean the commensurate weakening of government. Rather, it should be viewed as a means to strengthen the guideance and supportive functions of the government. The strengthened functions of government in guidance and support does not necessarily mean "non-intervention" on the part of the government. The issue of ensuring an adequate mix of autonomy and control will present a continuing challenge. The impact of policy will rest very much upon the extent of flexibility in control to ensure that it does not unduly impinge on the autonomy of private schools.

Policy Tasks

Enactment of Private School Promotion Law

The enactment of private school promotion law reflects an attempt to pave the way to the development of private schools. It should build a climate which encourages the autonomy and independence of private schools, doing away with unnecessary control and interference. There are three essential points to be reflected in the private school promotion law. The first point is self-sufficiency in financing private education. This suggests that properties be fully utilized to yield earnings. The Land Grant Act of the United States is a good example for us to model on. Incentive scheme should be built into the law so that private schools actively seek to turn land and forestry into profit-yielding business. Secondly, it is essential that the law establish a private education fund which can serve as a source of financing private schools. The fund is usually created by the joint contribution of private schools and the government. Thirdly, the law should obligate the government to provide subsidy. The subsidy is not a contribution coming out of charity but a means to ensure equal access to quality education, as mandated by the right of people to receive education on an equal basis. The government subsidy for private education is a global trend which is taken for granted. The Private Education Promotion Law in Japan stipulates that the government provide a subsidy equivalent to as much as half of the recurrent expenditures of private schools. In Denmark, government subsidy covers 70 percent of recurrent expenditure in private high schools. In Britain, University Grant Commission was formed to lend various kinds of support to universities. Nearly 75 percent of the recurrent expenditures of universities is covered by the national treasury.

Government Subsidy for Private Education

Education benefits not only regular attendant but also neighbors, the community and the nation, accordingly education can not be entrusted exclusively to private sector. This gives legitimacy and justification to the government's support for education. It is a global trend for the government to provide subsidy for private education and its subsidy is escalated in amount. The subsidy of Korean government for private education, as it stands today, is minimal, accounting for 7.6 percent in secondary school and 1.1 percent in colleges and universities. Considering that Korea features heaviest reliance on private education, it is an uphill fighting to effect educational development, if it is not backed up by the qualitative improvement of private education. If private education is left unattended, it may be a serious stumbling block to educational and other developments. The government subsidy is a must for overall development of the nation and the amount of subsidy should be escalated.

The national treasury which is made available to private education covers part of salaries and facilities expenditure, half of total interest accruing from foreign loan, 2 percent of pension and 2.76 percent of medical insurance fee. The government subsidy should increase enough to finance the maintenance of existent facilities of private secondary schools and bring the education cost per pupil to the standard of advanced countries.

Establishment of Private Education Fund

The most prominent problem of private education is the wide difference in tuition charges between public and private school. The latter has much higher tuition charges than the former. Our primary concern is with how to reduce the financial burden of students in private schools and bring it down to the level of public schools.

The growing concern for the gap in tuition charge gives urgency to establish a private education fund which can serve as a source of financing private schools. The private sources of the fund are diverse and this should be matched by the government contribution, which should account for, at least, 60 percent of total fund. The fund may be used to finance profit-yielding business and to finance private schools in the form of grant or loan. A model example may be cited from Japan, which provides empirical evidence of feasibility in Korea. Japan enacted Private Education Promotion Law in 1970 and subsequently established Private Education Foundation which is lauded for its remarkable contribution to the development of private education.

Favor in Taxation

Another way to solve the financial problem of private education is to provide favor in taxation for sources of funds purported for education. This measure is justified by the fact that education is a public service in nature which is offered by non-profit organization. The effect of favored taxation will be manifested in heightened ability of schools for self–growth.

Private schools and foundations are taxed in various forms, including corporation tax, income tax, special surtax, property tax, national defense tax, etc. Some of these taxes should be waived for private education organizations. The maximum amount set for contribution or donation from private source should be lifted and taxation should be withheld for them. The scope of favored taxation should be enlarged to include hospitals attached to universities, because much of their services are related to education and research. Tax exemption or tax reduction should apply to school foundations, when they engage in profit–earning business utilizing their properties and when the earnings are recycled to educational services. The sales of school properties occasioned by the necessity of moving school site to another place creates the same situation which merits consideration for tax exemption or reduction, providing the margin is recycled into educational services.

Contribution and donation constitute an important source of fund for private schools. In the case of private college and university, nearly 30 percent of total revenue comes from these sources. Therefore, the reform of taxation should be promoted along the line of rewarding donors for their contribution to the financing of private education.

Encouragement of Open-door Operation

As free, compulsory education will be extended to nine years by the late 1980's, a question is raised regarding "how to finance private schools." Some schools will be self-sufficient financially, while others will be very much dependent on the government subsidy or converted into public schools. The increased support of the government and the diversification of financial sources inevitably exert pressure to adopt open-door operation on the part of private schools. The open-door operation will invite government officials, enterpreneurs and celebrities to become the board of trustee members.

The necessity of adopting open-door operation is more appreciated by private universities, as exemplified by the universities of world reputation, Princeton University and Oxford University. The desirability of open-door operation applies not only to private universities but to public universities. The open-door operation should be directed to ensure autonomy and independence of university in operational matters. Underlying this new mode of operation is the notion that education, although offered by schools of private ownership, is not a means to personal affluence but a service benefiting the public at large.

5. EXPANSION OF NONFORMAL EDUCATION

Prospects

Demand for Continuing Education

Continuing education is a common tendency in all occupations. In the past, professionality needed for job performance was attained by adding working experience to basic knowledge. But in the contemporary world which sees the rapid torrent of technological advancement, this method has lost its relevance. The skill which is relevant today will become obsolete in a matter of a few years. Professionality is something like horizon which ever recedes before reaching it.

License obtained for a kind of skill is time-specific and it loses effect if the licensed person does not upgrade skill through an unceasing stream of trainings. The licensing system is not limited to skill areas; it is extended to managerial works and other professional works. Apart from licensing, the importance of continuing education can not be over emphasized in view of the necessity of renewing it to keep pace with breathtaking advancement of technology.

Continuing education also assumes importance among elderly people seeking to turn leisure into productive engagement. But the opportunities for continuing education are limited and "how to make it easily accessible by all people" will remain an overriding concern, as the demand for continuing education will keep on increasing.

International Trend of Nonformal Education

Social education has been dismissed as a secondary concern in the shadow of school education. But the new concept of life-long education heightened concern for nonformal education for its capability of offering break through for some of educational problems we face today. Nonformal education, having been upgraded to the same status as that of school education, will assume an important dimension of education.

In many countries, nonformal education has developed to play vital role in the realization of life-long education. Much of nonformal education in advanced countries are related to occupational training of different durations. To encourage participation of employees in nonformal education, paid leave has been institutionalized in some countries. Nonformal education in the developing countries takes the form of literacy education or vocational program oriented to develop human resources. In Thailand, Ministry of Education up graded the division of nonformal education under its jurisdiction to the bureau level. In Philippines, there is Assistant Secretary of Social Education within the Department of Education. As such, the importance of nonformal education is reflected in administrative structure. Compared with other countries, nonformal social education in Korea has received little attention.

Policy Tasks

Expansion of Nonformal Education Facilities

The lack of facilities impedes the development of nonformal education. Most of industrial firms and government agencies have their own facilities built for educational purposes. But there are virtually no educational facilities to speak of in social organizations. In Japan, each community has a citizen hall, exclusively used for educational purposes. The growing recognition of the role of nonformal education gives urgency to the establishment of such a premises to serve as the education center in each community, operated by regular staff.

The existent facilities such as Youth Center, Culture Center and Women Welfare Hall should be staffed by educational specialists, if they are to serve educational purposes, apart from making them available for renting or lease. The construction of educational facilities should begin with the areas with industrial facilities to make them available to education for employed workers.

Establishment of Supportive System for Nonformal Education

To ensure easy access to nonformal education, institutionalization of paid leave for employed workers is a vital necessity. It may be necessary to establish criteria to determine eligibility for paid leave, during which employed workers have full exposure to refreshment training. A majority of industrial firms have institutionalized training programs designed to upgrade the quality of workers. Some of them entrust the training of employees to professional institutes. In most cases, the provision of training is occasioned by the needs of industrial firms. It is also important to ensure that employed workers have the right to demand training as need arises. It should be made a rule to identify training needs, plan for the implementation of trainings and secure budget to finance it. In most of European countries, training for employed workers is the responsibility of associations of the respective occupational field or professional training institutes.

The fund for training might as well comprise the contribution of beneficiary firms and subsidy from public agencies. Granting favored taxation for the fund to be used for training is one way to promote the development of nonformal education. The law governing occupational training obligates a firm employing more than a certain number of workers to set aside a certain proportion of profit for training.

University Facilities Open to Continuing Education

A scheme should be developed to make the personal and material resources of universities available to continuing education. Efforts should be made to draw on the experiences of universities for the development and implementation of continuing education. Some universities have participated in continuing education of one kind or another and this case calls for the development of a mechanism to coordinate among the universities and bring educational programs under a single purview. The participation of higher for profrssionals—such as high-level manager courses and development strategy courses.

It is necessary to develop a wide variety of educational programs related to technology, medical science, journalism,labor issues, etc. The participation of universities in continuing education is a global trend, typical examples of which are extramural education in England and university extension or continuing education in the United States. Compared with foreign universities, Korean universities still remain aloof from the new challenges.

II

PROFESSIONALIZATION OF TEACHING PROFESSION

It is frequently said that teachers are the key factor for the success of education, which is the prime mover of national development. The necessity of improving educational conditions will bring forth a sharp increase in the demand for teachers. Increase in the demand for teachers will be more prominent in pre-school and nonformal education. The number of femaleteachers will show a sustained increase well into the 2000's.

The explosion of knowledge and the necessity of improving teaching methods will require that teachers possess professional competencies much higher than today's requirement. The professionality expected of teachers will necessitate the improvement of teacher training system in its entirety. While rapid economic growth has been favorable to those employed in industry, it has had a devastating impact on the attractiveness of the teaching profession, and this will make it inevitable to take incentive measures for teachers.

This chapter comprises four sections, namely; the streamlining of teacher education system, professionalization of teachers, the reform of teacher's in-service training system and the welfare of teachers.

1. STREAMLINING OF TEACHER EDUCATION SYSTEM

Prospects

Increase in Demand for Teachers

The demand for teachers is largely dependent on the fluctuation of student enrollment. The continual expansion of pre-school education will lead to a sustained increase in demand for teachers on this level. Due to the temporary reduction in the number of population in primary school ages, enrollment on this level will decline until 1987, swing back to reach its peak in 1996, and begin to decline slowly thereafter. The extension of free compulsory education to middle school will boost up enrollment on this level and this trend will continue until 1990. After passing through a short spell of decline, it will begin to increase slowly thereafter. Enrollment in high schools will keep on increasing.

Based on enrollment alone, the demand for teachers will not increase on the elementary and secondary levels. But in view of the present high teacher-student ratio, the demand for teachers will increase in proportion to the effort for reducing class size. Nonformal education will also see an increase in the demand for teachers in this area (see Table III-8).

Proportion of Teachers from Non-Teachers' Colleges

The growing proportion of teachers from non-teachers' colleges bring into doubt the rationale of teacher education system. By receiving those who failed to gain employment in other occupations, it created a tendency to view teaching as something that can be performed by any one. The pre-school education teachers come from various sources besides a few junior colleges which major in pre-school education. The major source of primary school teachers is teachers' colleges, but

Table III–8
Projected Demand for Teachers

Classification	1983	1986	1991	1996	2001
Kindergarten					
Children per teacher	32.15	22.97	18.02	14.91	12.00
Number of teachers	6,421	14,399	30,519	48,724	75,736
Annual increase in demand for teachers	(2,839)	(3,638)	(4,386)	(6,588)	
Primary					
Children per teacher	41.67	36.75	35.80	33.81	30.00
Number of teachers	126,163	130,954	139,972	151,804	167,155
Annual increase in demand for teachers	(4,843)	(5,219)	(6,040)	(7,086)	
Middle school					
Children per teacher	42.18	37.84	28.18	26.09	23.31
Number of teachers	63,350	72,751	79,607	94,207	107,944
Annual increase in demand for teachers	(6,652)	(4,980)	(6,522)	(6,839)	
High school					
Children per teacher	31.90	30.08	23.54	19.80	18.81
Number of teachers	63,109	75,056	91,965	106,260	120,485
Annual increase in demand for teachers	(4,109)	(4,151)	(4,178)	(4,423)	

Table III–9
Number of Primary School Teachers by Source

Classification	Total	Teachers' College	College of education	Teacher Learning	Qualification exam,	Others
Teachers	126,163	59,796	30,921	14,065	7,333	14,048
(%)	100.0	47.4	24.5	11.1	5.9	11.1

Source : MOE, *Statistical Yearbook of Education*, 1983.

those from other sources are not in a negligible proportion. They are colleges of education, graduate school of education, qualification examination, teacher training centers and Air/Correspondence University.

In the case of secondary schools, the graduates of non-teachers' colleges constitute a sizeable proportion of teachers (see Table III-10). They simply had a smattering of pedagogic subjects by the time they graduate from college. The pedagogic course designed for this purpose is a fary cry from the requirement.

Table III–10
Number of Secondary School Teachers by Source

Classification	Total	Nat. Col. of ed.	Private Col. of ed.	Teachers course	Teacher training	Qualif. exam.	Others
%	100.0	22.7	12.9	53.2	3.2	5.3	2.7
Middle school	63,350	16,616	10,591	29,975	2,865	2,161	1,142
High school	63,109	12,068	5,675	37,253	1,213	4,613	2,293
Total	126,459	28,684	16,266	67,228	4,078	6,774	3,435

Changed Qualities of Teachers

As industrial development brings forth material affluence, people will find themselves increasingly gravitated toward material orientation of the world. Along with this trend, people will find person-to-person relation increasingly deprived of humanity. Education, among others, is the most effective way to restore humanity amid the trend of dehumanization. As humane dimension of education is emphasized, the role of teacher will change. Among the required qualities of teachers, humane character, the warmth of heart and altruistic attitude will assume a more important dimension, apart from the expertise and skill of teaching. The new dimensions of teacher's quality will necessitate a reappraisal of the present teacher education system.

Policy Tasks

Streamlining of Teacher Education System

With the expansion of pre-school education, the demand for teachers on this level will increase and the need to improve their quality will become more urgent. The pre-school education teachers are produced by junior colleges and the call for higher professionality of teachers suggests that four-year colleges engage in teacher education.

As the two-year teachers' colleges are upgraded to four-year program, they are no longer distinct from the colleges of education which produce secondary school teachers. As plan is promoted to introduce departmentalization to higher grades of primary schools, how to organize the curriculum of teacher's college will become a matter of special concern. The primary school teachers who received less than 11 years of schooling should be encouraged to attend Air and Correspondence University. At the same time, teacher's colleges should offer evening classes for teachers who seek to improve their competency of teaching.

The major source of secondary school teachers is the college of education. Other sources include the department of education within university and the university which provides exposure to pedagogic subjects for students wishing to have teaching career after graduation. To produce teachers in technical subjects, the college of technical education came into being.

According to the 1983's data, the graduates from colleges of education account for 35.6 percent of total teachers. The supply capacity of colleges of education should be expanded to meet 70 percent of new entrants to teaching. The pedagogic course of university should be reorganized so as to ensure its relevance to the new qualities of teacher.

The graduate school of education should strengthen its functions in relation to the professionality of teachers, with special emphasis on subject-centered education. It should serve the function of in-service training. Nonformal education is given a place in the curriculum of graduate school of education as a subject to be taken by those majoring in educational administration. There is no separate course to develop the qualities of teacher in nonformal education. It is important that a course be created on the basis of the clearly defined qualities of teacher and criteria for certificaion be established, if it is to meet the increasing demand for teachers in this area.

Reform of Curriculum in Teacher Training Institutes

It is imperative to reform the curriculum of teacher education toward the one that develops the value dimension of teacher's quality, namely; humane character, empathetic understanding of others, commitment to educational cause, and motivation for self-improvement. The new curriculum should feature heavier reliance on experiential learning through survey, discussion, role-play, joint research, simulation and game. These methods should be employed in a way that develops higher mental processing skills, inductive and deductive, and an ability for conceptual and structural understaning of things. Independent research should be encouraged around teaching-learning process, curriculum organization, grouping of learners, evaluation and development of instructional materials and teaching aids.

Long–term Planning for Supply of Teachers

The factors to be considered in long-term planning for the supply of teachers are the number of students, migration of students across regions, enrollment ratio in the next higher schools, and turnover of teachers. None of these renders itself for easy prediction. The problem of planning is compounded by the necessity of adjusting the supply of teachers four years before. Therefore, the process of planning should be backed up by concrete data which are provided by a comprehensive study designed to analyze the factors. Once a plan has been formulated, it is essential to regard it as a process subject to evaluation and modification on a continuing basis.

2. ENHANCEMENT OF PROFESSIONALITY IN TEACHING

Prospects

New Qualities of Teachers

The professionality of teachers can be considered in two dimensions; one is expertise and skill related to subject matters and teaching and the other is attitudinal posture, namely, the sense of social responsibility. But the lack of autonomy, the ambiguity of certification criteria and the irrelevance of teacher education system have militated against the fullest development of teaching professionality.

With the enhancement of living standard and educational attainment, people become more conscious of the accountability of education, setting out a cry for the professionalism of teachers. The demand for higher professionalism is also traceable to the necessity of responding to more divergent challenges resulting from the diversification of educational contents and method, the quantitative growth of schooling and the implementation of life-long education.

Industrial development created a tendency to treasure material affluence to the relative belittling of human dignity. This trend is manifested in the dehumanization of educational process. Teachers are held responsible to deter the trend of dehumanization and restore humanity. The new challenge will be an additional motive for upgrading the professionality of teachers.

Greater Importance of Teaching Practice

The most prominent weakness of teacher education in Korea is the lack of teaching practice. Four weeks are given to student teaching throughout the four-year course of teacher preparation, as compared with 1–5 years given in foreign countries. In view of the increasing demand for the professionalization of teaching, the proportion of teaching practice to total credit requirement brings into doubt the relevancy of teacher preparation program in its entirety. There will be a need to provide for a sufficient amount of apprenticeship before licensed to be a teacher, comparable to the internship of medical doctor.

Under-schooled Teachers

Preparation for teaching requires many years of schooling. On the average, the educational attainment of teachers is lower than those of other professionals. The years of schooling required to become a primary school teacher are 14 years and additional two years are required to become a secondary school teacher. The proportions of underschooled teachers are 23.4 percent in primary school teachers, 50.6 percent in master teachers of primary school, 6.7 percent in middle school teachers, 21.0 percent in master teachers of middle school, 7.2 percent in teachers of academic high school, 12.1 percent in master teachers of academic high schools, 7.2 percent in teachers of vocational high schools.

Noteworthily, the proportion rises to 83.6 percent in the principlals of primary school. In the past, the normal high school was the major source of primary school teachers. The terminal point of schooling for the majority of incumbent principals was the normal high school. The number of under-schooled teachers increased as the normal high school was upgraded to junior teacher's college. When all of teacher's colleges are upgraded to four-year colleges, the number will increase further (see Table III-11).

Table III–11
The Ratio of Under-schooled Teachers

(%)

School level	Teachers	Master teachers	Assist. Principal	Principal
Primary school	23.4	50.6	78.3	83.6
MIddle school	6.7	21.0	37.9	43.3
General high school	7.2	12.1	18.7	30.7
Vacational high school	7.2	6.3	15.9	31.5

Source : MOE, *Statistical Yearbook of Education*, 1983.

Assignment to Different Subject Matters

The professionalization of teaching is hampered by the fact that many teachers are assigned to the subject matters they are not prepared for. 18.4 percent of middle school teachers are teaching the subject matters they are not prepared for. The proportions are 7.6 percent in general high schools and 9.6 percent in vocational high schools. This problem is more serious in the under-sized schools (see Table III-12).

Table III–12
Number of Teachers Responsible for Subject Matters

School level	Responsible for relevant subjects	Responsible for relevant and non-relevant subject	Responsible for non-relevant subjects
Middle school	48,312(81.6)	9,162(15.5)	1,733(2.9)
General high school	30,319(92.4)	2,084(6.4)	389(1.2)
Vocational high school	24,767(90.4)	2,129(7.8)	480(1.8)

Note : Figure in parenthesis are composition ratio

Source : MOE, *Statistical Yearbook of Education,* 1983

Policy Tasks

Reform of Teacher Licensing System

The licensing of teachers consists of four layers – Grade II teacher, Grade I teacher, assistant principal and principal. The principal is the top position that teachers can ascent to through teaching career. This hierarchical order caused the drain of competent, experienced teachers to administrative positions, creating a tendency to ignore classroom teachers.

The success of professionals is not always guaranteed by the vertical mobility upward through hierarchical order. The present hierarchical order of licensing militates against the professionalization of teachers in that it places administrators on the top of teachers. This suggests the need to create the position of head teacher comparable in grade to assistant principal or principal. This will encourage teachers to pursue professionality along the hierarchical line of teachers. Promotion to the head teacher may be based on the national examination, teaching experience and performance - based evaluation. The number of teachers should be adjusted in view of the numbers of schools, classes and subject matters. The head teacher may well be assigned to supervision, counseling and research in the place of the reduced number of teaching hours.

In parallel with the classification of hierarchical order, functional devision should be made along the horizontal line, viz., classroom teacher, subject matter teacher, counselor, librarian, health specialist, special education teacher and nonformal education teacher. As the social function of school is emphasized, there is a need to hold a teacher exclusively responsible for liaison with social organizations and industry.

Introduction of Teaching Apprenticeship

The present licensing system enables a licenced teacher to begin teaching immediately after employed., with no probationary period between the two. This system is more likely to defeat the effort to enhance the professionalism of teaching. It is worthwhile to consider apprenticeship ranging from six monthes to one year before teaching.

The apprenticeship is commendable from the viewpoint of inservice training. It provides an opportunity to develop familiarity with the new working environment and receive guidance from teacher colleagues. Their performance of teaching is evaluated by students, teacher colleagues, and a master teacher. Apprenticeship is not a conditional employment but the inception of teaching career which begins with employment. It is during this period that the deficiencies of teaching are brought to the fore and that new teachers develop their teaching styles.

3. REFORM OF IN-SERVICE TEACHER TRAINING SYSTEM

Prospects

The Importance of Continuing Education

The professionality of teaching is ensured by continuing education. Teachers are learners who should be motivated for selfrenewal. But the present training system, due to its primary concern with earning credits for promotion, is far from meeting the need of continuing education.

The proliferation of knowledge and technology and rapid social transformation hightens the importance of continuing education which facilitates the adaptation of teachers to changing situtation. Teachers are mandated to keep pace with the advancing frontiers of new theories and skills and to appreciate their implications for education before they are utilized for education. The need to strengthen the social function of school in relation to life-long education highlights the importance of developing the professionality of teaching in social education.

Reappraisal of In-service Training

In order for a grade II teacher to qualify for a grade I teacher, he or she should earn the required credits of nine subject matters. Of these, 5–6 subject matters are similar to or the same as those included in the curriculum of the college of education. The in-service training, therefore, is viewed as the miniature of teacher preparation program. There is no distinction in contents and duration between the in-service trainig for grade II teachers and that for grade I teachers. Neither is there a graduated sequence of contents between the two. It gives discontinuance to continual ascending of the professional ladder.

Although the in-service training is designed for teachers in service, it is not different from the pre-service training in that its program, due to its theoretical orientation, remains aloof from the real needs of educational scene. By methodology, it is hardly distinguished from the latter by placing as much reliance on lectures simply to impart knowledge.

Policy Tasks

Correct View of In-service Training

The motive for in-service training had more to do with the desire to gain promotion to higer position. What is important is to motivate teachers for self-renewal. The in-service training for those wishing to be qualified for promotion may well be integrated with other trainings oriented toward subject matter teaching. Curriculum may be standardized by school level and by subject matter. Each course may consist of two credits, each credit composed of 12 hours. Total credit requirement to be earned throughout teaching career may be set at 80. Each teacher may have an access to in-service training at the intervals of six years, with 20 credits to be earned through each session. As Air and Correspondence University is upgraded to a four-year course, it would be worthwhile to develop an attachment program built into the system, particularly for primary school teachers to draw on for upgrading their professionalism.

The school-initiated training, which received lime light as a new training model in the mid 1970's, has yet to be institutionalized and it is necessary to lay the infrastructure for it. The advent of this concept signals a trend to change the site of training from the training centers at the central or provincial levels to schools, a movement toward the training on site. Along this line, training program should get rid of formalities with greater emphasis placed on substance, and this will enable training to effectively respond to the real needs of educational scene. Experienced teachers and supervisors should be encouraged to serve as trainers.

Linkage between Teacher Preparation and In-service Training

Since teachers should seek to upgrade their professional competency amid the proliferation of knowledge, both teacher preparation and in-service training should be put on the continuum of life-long education so that they are in a mutually complementary relation. The resources, personnel and material, of in-service training institutes, are in a serious shortage to meet educational needs. The linkage between teacher preparation and in-service training should be such that provides for the sharing of resources and functional division between the two.

There is the lack of coordination among teacher's in-service training institutes. In-service training programs for primary school teachers are attached to 11 teachers' colleges. There are 16 universities which offer in-service training to secondary school teachers. Uniquely, College of Education, Seoul National University, offers the training of educational administrators. Besides, municipal and provincial education research centers provide in-service training, particularly in relation to subject matters and material development. Although in-service training institutes are numerous, there is no mechanism to coordinate among them under a single purview. There is no vertical linkage between the training programs for qualification and those related to professionalism, which ensures a graduated sequence of contents between the two categories. It is imperative to trim down ineffective training programs and reclassify them in the form of abolishment and incorporation into others. It is necessary to establish the hierarchical order of in-service training institutes.

Research and Development of Teacher Training

The contents and methodology of teacher training are subject to change in relation to the ever-shifting frame of reference. The in-service training is blamed for the lack of relevance to the real needs of educational scene by copying the program of preservice training. In order that teacher training program remain responsive to the changing reality, there should be an unceasing stream of research and development activities.

Much of R & D will concern the development of teacher training programs and materials. In this as much attention should be directed to local or school-initiated training and the self-learning materials. The focus of attention in R & D should be on teaching methodology, learning theories, modification of contents and evaluation method.

Overseas Studies of Teachers

Enlarging the opportunity for teachers to study abroad serves the purpose of in-service training. The strength of overseas study is that it gives teachers new criteria with which to compare their own value, ways of thinking and teaching methods. Opening eyes to a new world gives stimuli for self-improvement. Enlarging the opportunity for overseas

Table III-13
Plan for Overseas Studies of Teachers

in person

Classification	1983	1984-'86	1987-'91	1992-'96	1997-2001	1984–2001
Primary and Secondary	426	1,561	2,500	2,500	3,000	9,561
College & University	100	530	1,000	1,500	2,000	5,030
Total	526	2,091	3,500	4,000	5,000	14,591

study is also justified from the point of boosting up their morale and as part of an incentive scheme.

Administrative and Financial Support

It is necessary to include a provision in the regulation pertaining to teacher training, mandating that every teacher should receive in-service training on a periodical basis. It is also important to provide facilities to keep a wide range of materials available for use by teachers and to house professional activities of teachers. Creating a condition for continuing education is the important roles of principal and this includes reducing the load of teaching and provision of financial support and other incentives. Supports for teachers receiving continuing education come from the principal's awareness of the importance of continuing education.

4. WORKING CONDITIONS AND WELFARE OF TEACHERS

Prospects

Incentives for Teaching

Industrial development, which gained intensity in the early 1960's, brought forth the relative lowering of the socio-economic status of teachers amid the mushrooming of more lucrative jobs. In working conditions and welfare, teaching profession is not comparable to others. Teaching profession has long since lost attractiveness under the rising water of other professions, and this trend militates against the effort to upgrade the quality of teachers. The problems is further compounded in view of the fact that teachers in general lack the sense of commitment to education.

Heavy Workload

The excessively heavy workload imposed on teachers is another factor which strips teaching of attractiveness and works against the upgrading of professionality. Given the maximum load of teaching at 24 hours per week, 37.6 percent of middle school teachers, 8.1 percent of academic high school teachers and 6.1 percent of vocational high school teachers are over-loaded. Including hours spent on guidance and works related to school operation, the workload of teachers are heavier. Administrative chores add to the heavy workload of teachers.

Table III-14
Breakdown of Teachers by the Number of Teaching Hours per Week (1983)

(%)

School level	Total (person)	– 12 hours	13–21 hours	22–24 hours	25 hours
Middle school	63,350	8.1	14.1	48.4	29.4
General high school	34,432	7.8	50.0	37.0	5.2
Vocational high school	28,677	7.8	55.3	30.8	6.1
Total	126,459	7.9	33.2	41.3	17.6

Source: MOE, *Statistical Yearbook of Education*, 1983.

More Female Teachers

Teaching profession still remains attractive for women, and there are an increasing number of women gaining employment as teachers. The lower the school level, the larger the proportion of female teachers. In kindergartens 98.8 percent of teachers are female. Their proportions in primary schools, middle schools and high schools are 41.3 percent, 36.3 percent, and 19.3 percent, respectively. These proportions are increasing steadily.

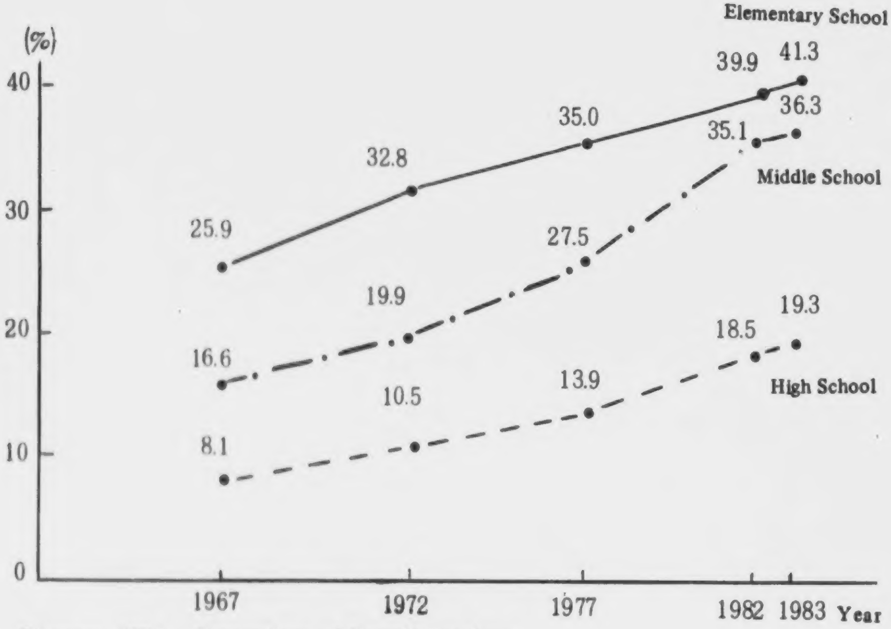

Diagram III-2 Proportions of Female Teachers

Policy Tasks

Higher Salary for Teachers

The most popular element of incentives for teachers is to raise their salary scale to the level favorably compared with those of other professional jobs. Comparing the 1981's average salary of teachers with the average living cost, the former takes 94.4 percent of the latter. The starting salary of teachers is comparable with that of public servants but the increasing rate of salary scale for teachers is outpaced in proportion to the years of service. It takes 30 or 35 years for a graduate of teachers' college or college of education to ascent to the top of salary grades, longer than in other professions and in other countries.

The time length taken for promotion to higher grade should be reduced by arranging that one reaches the top salary scale after the age of 50, and an incentive should be reflected in the form of higher salary for those who have served for more years. The salary scale of teachers should be comparable with that of administrators so that teachers don't seek to gain promotion to administrative position.

Giving an incentive in term of monetary reward requires a resolute determination of the government to increase educational finance, since it should be reflected in policy measures. In 1974, Japan enacted "the law of elite recruitment for education" which obligated the government to increase the salary scale of teachers drastically. This model is worthwhile to be considered in our scheme to provide teachers with incentives.

Table III-15
Comparison of Salaries between Teachers and Public Servants on Top Levels

Years	Educational Officlas		General Officials		Military Personnel	
	Grade level	Salary	Grade level	Salary	Rank	Salary
1960	1–1	70,920	1–1	72,920	Maj. Gen.	70,260
1965	1–1	19,150	1–1	18,400	Brig. Gen.-2	19,750
1970	1	71,620	2–4	71,100	Col.-9	71,800
1975	1	122,500	2–5	121,420	Col.-4	124,400
1980	1	362,500	2–20	363,000	Col.-5	362,900
1982	1	450,000	2–23	451,000	Col.-8	444,700

Notice : 1) Currency unit in 1960 was Hwan.
2) Salaries of educational officials before 1970 was those of high school teachers.
3) Teachers after 1970 were those of middle school.

Source : Korea Federation of Educational Association.

Relieving the Pressure of Workload

With routine works put into automation, the working hours have been on a declining trend in other occupations. Along this trend, a need arises to reduce the days of work per week to five days, for it invites the reduction of teacher's workload with a resultant increase in the possibility of enhancing professionalism. The first step to be taken to this end is to recruit more teachers to fill out the legally-set quota of teachers.

Much of administrative formalities should be trimmed down, if teachers are to be relieved of administrative chores. The kinds of records should be simplified and the auditing that focuses on the accuracy of documentation should be done away, so far as teachers are concerned. Another factor to increase teacher's work load is the over—crowded classroom. Reducing class size is another way to reduce teacher's workload.

Welfare and Fringe Benefits

Welfare and fringe benefits should be promoted for teachers and their dependents. Teachers should be ensured of pension, medical insurance, credit loan for housing and education, tuition exemption for their dependents and paid leave up to two years, if it is to serve the purpose of improving their professionalism.

The promotion of welfares should be extended to physical facilities in and outside school. In school, a study room should be arranged for a master teacher, together with a joint study room on each grade level. Outside school, teachers should be able to benefit from low—priced youth hostel and other facilities for recreation and academic activities.

Personnel Management of Female Teachers

The increasing number of female teachers is a global trend. Therefore, steps should be taken to tap the potential of female teachers in education. The present personnel management system discourages female teachers to reinstate after child birth. This system should be changed in the direction of allowing female teachers a certain period of leave after child birth or for child rearing and to reinstate to teaching after refreshment program. Opportunities should be expanded for female teachers to advance to supervisory or administrative positions depending on their demonstrated abilities.

III

PROFESSIONALIZATION OF EDUCATIONAL ADMINISTRATION

Educational administration is a systematic effort to provide condition and support for the achievement of educational goals. Its focus of attention is on helping schools to perform educational functions.

Amid the mounting outcry for autonomy on the local level, there is a movement toward regional educational planning and school centered operation. School principal will be given a greater latitude with regard to school operation.

Although local autonomy is institutionalized and scientific ways of administration are devised, still there is a need to professionalize educational administration. This involves enhancing the professional competency of educational administrators and developing a high sense of commitment to the cause of education. An infrastructure should be laid for a continual improvement of the professionality of educational administration.

This chapter comprises three sections, namely; autonomy of educational administration, scientific and effective administration and professionalization of educational administrators.

1. AUTONOMY OF EDUCATIONAL ADMINISTRATION

Prospects

Change in Educational System and Educational Environment

The mode of educational administration should change in response to the changing environment. Increasing the autonomy of educational administration will be a way to actively respond to the changing environment.

The school, as the major institution which prepares children for the future, should be free of interference and control from external pressures, although it is subject to be influenced by environmental factors. The law ensures the school of autonomy in educational administration, but the reality is far from what it is supposed to be.

The school no longer has monopoly on education, as social institutions are upcoming to share educational responsibilities. Confronted with new challenges, the operation of school is still marked by rigidity. It should actively seek to establish a mutually complementary relation with other educational organizations and this requires a greater degree of autonomy.

The rapid growth of school population has weakened the role of school in the internalization of value and, instead, strengthened the function of quality certification. This creates the tendency to treasure the symbolic value of education. The administration and operation of school should be redirected to support the restoration of its inherent function.

Allowance for Regional Variation

Centralized administration demands that local administration and school operations be put into a uniform format, and this results in the stifling of creativity on the local and school levels. Under this circumstance, concern is heightening for the technical efficacy of educational administration. Regional disparities exist in educational opportunity, education quality, physical conditions and educational financing. Confronted with the variation of educational conditions, how to ensure equal access to quality education is the matter of grave concern in educational administration.

The inherent functions of educational administration are service and support. The performance of these two functions is greatly hampered, unless autonomy is ensured for local administration and school operation. Autonomy enables schools to respond to the unique needs of the community.

Complexity of Educational Operation

The problem of educational operation is that efficiency itself is often mistaken for the goal of educational operation. This means that efficiency more often than not takes precedence over the goal of education and this is a phenomenon attendant to transitional process toward the bureaucratization of administration. In the complexity of educational structure, there is a heightening concern for means and the mad pursuit of the means blinds one to the true goal of operation. There are many instances where what has been achieved is at odds with the goal and person-to-person relation is dehumanized with individuals lost in the gigantic machinery of educational system. There is a resistance built into the system to change. Since educational system differs from others in structure, the human relation of its constituents is more than important and this is possible only when its constituents enjoy a greater degree of autonomy.

Teachers are overburdened by managing the over-sized classrooms and hardly find the time to do research related to instruction. The labor-intensivity of teaching adds to teacher's workload. Under this circumstance, it is difficult to individualize instruction to the degree that enables individual learners to learn things relevant to their needs and at their own pace.

Policy Tasks

Local Autonomy in Education

Local autonomy in education is the prerequisite to ensure the professionality and neutrality of education. The law provides for local autonomy in education indepdendent of municipal and provincial governments. The parliamentary body of education at the local level was terminated by the Military Revolution in 1961, with education, science and arts to be brought under the jurisdiction of municipal or provincial government. The law revised in 1963 separated educational administration from general administration and set up the board of education at the municipal and provincial levels and office of education at the country level. They represent the combination of executive and decision-making bodies. It is necessary to further seek local autonomy to the degree that ensures the institutionalization of local autonomy. If local autonomy is to take root in its true sense, it is essential that parliarmentary body be created at the local level and the existent entities be reduced to executive bodies.

Optimum Sharing of Responsibilities

The decentralization of educational administration brings into focus the matter of providing for an optimum share of responsibilities between the central and local governments. Local autonomy related to the implementation of policies should increase in proportion to the strengthening of planning and policy formulation at the central level. This will invite the necessity of realigning the administrative structure of local education to strengthen its supervisory function. Local administration should be encouraged to develop the capability of regional planning for educational development.

Autonomy of School

Efforts should be made to develop an educational administration centered around school, which gives greater autonomy to school principal. Creativity breeds on autonomy. The educational administration implemented hitherto has regarded schools as an identical face, irrespective of their uniqueness associated with local environment. Administrative orders specifying what to be done by school should be softpedaled to encourage the creative approach of schools to problems.

Adjustment of Jurisdiction

The Ministry of Education is still loaded with works which might as well be transferred to lower levels. Junior colleges and universities are under the jurisdiction of the Ministry of Education, high school under the jurisdiction of municipal or provincial government and primary and middle schools under the jurisdiction of county office of education. The principle of administrative decentralization suggests that junior colleges be placed under municipal or provincial board of education and high schools under the jurisdiction of country office of education. At the school level, it is important to relieve teachers of administrative and peripheral works so that they devote more time to instruction and preparatory works for it.

2. SCIENTIFIC AND EFFECTIVE ADMINISTRATION

Prospects

Complication of Educational Administration

The Korean society envisioned for the 2000's will grow in complexity in proportion to industrial development and population growth. Even rural society will undergo functional diversification. Along with this trend, administration will be asked to play more divergent roles to meet the growing needs of people. Administration will shift its focus from control and interference to the promotion of people's welfare and this change will pervade educational administration. Educational administration will be more complicated by the necessity of serving larger audiences which bring more needs to be met. Responses to a wide variety of needs will require that educational administration be more scientific and cost-effective.

Accountability of Educational Administration

As education reaches masses of people, it will become a matter of daily concern for all people. As concern for education is heightening, people will be more conscious of the accountability of educational administration. Education will be the subject of public debate with regard to the relevancy and cost-effectiveness of educational programs. To ensure the accountability of education, it would be necessary to introduce new management skills – such as MBO (management by objectives), cost–effectiveness analysis and management information system.

Importance of Supervision and Guidance

The proliferation of knowledge not only alters the educational role of school but calls for upgrading the professional competency of teachers. This also requires that supervision and guidance, which have been viewed in a narrow context, be reviewed in their totality in view of the new demands.

Supervision and guidance themselves are highly professionalized services due to their role in upgrading the professionality of teaching and managing class and school. There should be enlarged opportunities for supervisory staff to develop their professional competency.

The traditional role of supervision, marked by control and one-sided instruction, should change toward a democratic mode of guidance emphasizing the participatory role of teachers. The difficulty of teaching learners with a wide range of individual differences suggests that supervisory staff be more frequently brought into contact with classroom teachers through visitation, seminar, workshop and joint research.

More Information to Be Processed

Information and materials to be processed for educational purposes will increase in amount beyond the capacity of the present administrative staff. Whatever the size of administrative staff may be, there is no way to keep pace with the rapidly increasing load of administrative works, unless there is a dramatic departure from the present mode of administration. It is imperative to devise a scientific way of processing routine works with rapidity and accuracy.

Policy Tasks

Storing, Management and Supply of Educational Information

The growing diversification of educational needs, coupled with the expansion of educational administration system, complicates the process of decision-making. The formulation of policy measures requires that the process of decision-making be fed with the continual flow of information. Amid the proliferation of information, it is necessary to establish an educational information center for municipal or provincial board of education. This center collects, processes, stores and supplies information to provide for informed decision-makings on educational issues. To fulfill information needs effectively, it is desirable to computerize the system.

Reinforcement of Comprehensive Evaluation

The essential element of educational planning is to set forth milestones which guide educational development in consonance with the national development plan. The milestones are represented by more specific indices which quantify the targets to be achieved. It is crucially important that the plan provide for evaluation regarding the progress of educational development against the indices to indicate the areas of concern which leave something to be desired and give insight into corrective measures to be taken. In this evaluation, the productivity and accountability of education will be the targets of priority attention.

Improvement of School Operation System

The purpose of educational administration is to create an adequate condition for teaching-learning activities. As an initial step, it is important to relieve teachers of administrative chores and this requires that routine works be put into automation. Automation is based on the utilization of advanced technologies, namely; word-processing system and computer. The automation of routine works will enable administrators to devote more time to creative works related to support for teaching and learning.

It is also important to introduce new management skills, viz., management by objectives, production management process and cost-effectiveness analysis, to improve the administrative efficiency of education.

Strengthening of Supervision and Guidance

Supervision and guidance aim at ensuring the professionality of teachers which leads to education of higher quality. The professionality of teachers is ensured by strengthening supervision and guidance. And this requires that administrative structure be realigned, the supervision strengthened and administrative and financial support increased.

In the first place, the planning function of municipal and provincial boards of education should be strengthened. In preparation for the forthcoming implementation of local autonomy, encouragement and support should be given to the development of local-initiated supervision, which bring teachers into more frequent contact with supervisory staff. This suggests that supervisory capacity be developed around the county office of education. The heightening concern for pre-school education, special education and life-long education necessitates the reorganization of administrative structure to do justice to these new areas of concern.

The reorganization of administrative structure at the municipal and provincial level should be promoted along the line of delegating much of its supervisory roles to local level and providing facilities for supervisory materials and equipment.

Superivisory councils are organized by school level, namely,; high school supervisory council at the municipal or provincial level and primary and middle school supervisory councils at the local level. These councils commend themselves as a mechanism to provide forum for supervisors across regions and to facilitate exchange of information and performance of joint research. Since they contribute significantly to the professionalization of supervision, their activities should be encouraged and necessary support should be given thereto.

It might be worthwhile to explore the desirability of using assistant supervisors to be recruited among teachers. Devoting half a day to teacher's engagement in research may deserve of consideration in relation to the scheme to enhance the professionality of teaching.

In parallel with the supervisory councils, school-initiated supervision needs to be encouraged. This requires that an experienced teacher be selected to be exclusively responsible for supervision within a school. The school–initiated supervision should concern specific matters pertinent to the instruction of subject matters. At the same time, there should be a training scheme designed to enhance the supervisory competency of these teachers.

The shortage of staff responsible for clerical works spills over much of administrative chores to supervisors. It is necessary to consider the employment of assistant clerks to work for a supervisor so that the latter is fully devoted to supervisory works. Logistical supports need to be increased, which includes making a vehicle available to supervision and increasing supervision allowance.

3. PROFESSIONALITY OF EDUCATIONAL ADMINISTRATORS

Prospects

The Quality of Educational Administrators

The diversification of social stratum and population growth are manifested in the heterogeneity of learners' background, the diversification of educational needs and the complication of educational administration. The professionality of educational administrators are represented by the ability of integrate divergent components of educational system into a coherent entity serving educational goals. Their professionality is also measured by the degree of openness to new management skills—such as management by objectives and cost—effectiveness. In this sense, educational administrators should be multi—skilled in organization skill, human relation and management.

Changed Role of School Education

There is a growing tendency to view school education in the context of life—long education. In other words, schooling is viewed as part of life—long education which continues from cradle to death, as contrasted with the conventional notion that education is terminated with the completion of schooling. The new trend requires that schooling be effectively linked to other parts of education. This also suggests the necessity of changing the role of schooling.

Multi—qualities of Educational Administrator

The importance of raising the professionality of educational administrator is highlighted in relation to the changing trend of curriculum, instruction and evaluation. They need to deepen the understanding of what the diversification of educational program and the individualization of instruction imply to their roles as an administrators.

As schools should be functionally linked to other educational institutes and serve as the community center, educational administrators should be well informed of the unique needs of community and the way to assess problems and needs of community people. Apart from the cognitive aspect of quality, they should develop an ability to serve as an educationalist, as a social leader and a pacesetter for community development.

In order to counter the dehumanization of educational process, they need to develop understanding of human relation, love and trust not allow for the consideration of the unique nature of educational administration. Although pedagogy is made one of the subjects included in the examination, this gives a token treatment, far from instilling a necessary orientation of education. To give prominance to the unique nature of educational administrator, it may be necessary to revise employment provision to demand that applicants for educational administration have had the experience of teaching, while increasing the proportion of pedagogic subjects in the pre-service training program.

The proportion of pedagogic subjects should also increase in the in-service training program. It is also necessary to increase the opportunity for in-service training, including overseas study. The internship program, whereby educational administrators visualize the advanced system of educational administration in other countries, should be promoted.

Professionalization of Supervisory Staff

The expected changes in the role of school, contents and method, pose new implications for the role of supervisory staff. What is apparent, though, is that these changes render control-centered supervision obsolete and demand that supervisory role be diversified. The diversification of supervisory role, no doubt, suggests that steps be taken to enhance the professionality of supervisory staff.

The supervisory staff should be divided into various levels, coincident with the position, with each level subject to be licensed. Promotion to the next higher level should be made contigent on the completion of in-service training. The current supervisory supervisor and layer covers a wide range of hierarchical positions. This means that supervisors range from superintendent general of county office of education with 3-4 positions between the two. A system comprising four levels, namely, assistant supervisor, supervisor, senior supervisor for people, and the awareness of social obligation and accountability of school.

Policy Tasks

Improvement of Training System for Educational Administrators

The present training system for educational administrators leaves much to be desired in view of the qualities envisioned of them in the future. Program contents should be renewed to do justice to new management skills essential to educational administration. Total hours to be completed through the in-service training are 260 and these are not enough to develop the multi-qualities expected of an educational administrator in the future. The professional qualities of an educational administrator are such that might as well be developed through degree programs.

The relevance of contents of the present in-service training program can not to be questioned in view of the new dimensions of administrator's quality. Public administration, public financing and management outshine pedagogical subjects and it is for this reason that the training program is far moved from educational scene. The fundamentals of education and curriculum should be given heavier weight with a commensurate increase in individual research.

Teaching method also leaves much to be improved. Lecture-bound instruction is the dominant scene of training. Greater emphasis should be placed on case studies, experiential learning, joint research, simulation, role-playing and games. The change of teaching method should parallel the development of relevant materials.

Professionalization of Educational Administrator

The way in which educational administrators are employed does and head supervisor, deserves of consideration in the reorganization of hierarchical order.

The roles of supervisors are clearly distinguished from those of teachers. Therefore, teaching or administrative experience does not always qualify for supervisor. It is necessary, therefore, to define the roles of supervisors and set forth criteria for employment. In this connection, the institutionalization of licensing system is a vital necessity, since it is designed to assign right persons to supervisory role. The certification system may require that the employment of supervisors be based on the national examination and the qualification of candidates may be established in terms of teaching or administrative experience. But the result of the standard examination should not be the sole indicator of qualification; research experience and actual performance of works should be reckoned with.

The necessity of maintaining the higher professionality of supervision suggests that a provision be enacted to mandate employment to be contingent on the completion of a certain period of training on various levels. Such a training may be attached to graduate schools or local training institutes, depending on the starting level. In order to become a supervisor, he or she should be cognizant not only of educational fundamentals but of law, public finance and personnel management. This need should be reflected in the training program.

Since supervisors are in a position to help teachers develop professionality of teaching, they should strive to continuously renew their expertises ahead of teachers. In this respect, they should be ensured of access to in–service training, preferrably once a year, longer than 10 days. The contents of program should include a wide range of subjects, not only their respective subject matters but also law, public finance and management, designed to develop a broad knowledge base.

IV

EDUCATIONAL RESEARCH AND DEVELOPMENT

Educational development means a continual increase in the ability of educational system to effectively respond to pressures for change from within and without the realm of education. It is in this context that the importance of educational research and development is highlighted. The educational system itself is not an end product but a process subject to change responsive to new demands. The continual change of educational system should be guided by an unceasing stream of research and development.

The proliferation of new theories and methods necessitates the establishment of an information system which collects, processes, stores and retrieves them to support educational research and development and help policy makers make an informed decision on educational issues.

This chapter discusses needs for educational research and development and specific tasks to strengthen them.

1. EXPANSION OF RESEARCH AND DEVELOPMENT SYSTEM FOR EDUCATION

Prospects

Growing Importance of Educational Research and Development

By instinct, man is driven to seek new principles and rules to raise the effectiveness and efficiency of a system in performing its role toward a goal. Modern science and technology, as we see today, are the products of man's constant search for new things. There will be a growing dependency on research and development, as it assumes the dimension of a matter of survival in the dynamics of international competition.

The importance of research and development is as much appreciated in education, as it provides energy to fuel educational progress. But the existent facilities for educational research and development, as they stand today, are not up to the new challenges. They exist in the capital and provinces, but most of them are still in an infant stage. The Central Education Research Institute, inaugurated in 1953, was the genesis of research institute in Korea. This was dissolved in 1972 for development into Korean Educational Development Institute.

Inaugurated in 1953, The Korean Society for the Study of Education has been engaged in research and development. Beginning in 1959, it has hosted an annual academic forum to stimulate research and development. As a private, autonomous entity, Korea Institute for Research in Behavioral Science was set up in 1968 and made itself known for significant contribution to the reform of teaching in particular as well as theoretical and action research in behavioral sciences.

Educational research and development gained momentum as Korean Educational Development Institute came into being in 1972 and this distinguished itself from other research institutes by the systematic undertaking of R & D covering a wider range of components, including school system, curriculum, teaching method and educational broadcasting. Besides, non-professional organizations have been involved in research and development, as need arose. The Ministry of Education provides funds for research and development to be undertaken by research institutes and individual researchers and forms task forces which conduct studies related to specific policy issues, as need arises. The Korean Society for the Study of Education engages in action research and policy studies of its own concern. There are municipal and provincial education research centers which are primarily concerned with action research and development of instructional materials and teaching aids. Although numerous organizations exist, there is much to doubt as to whether they are fullfledged to conduct research and development.

Autonomy of Research and Development Institutes

Growth of an institute in research capacity is facilitated when it is ensured of a fullest measure of autonomy. Autonomy aims at eliminating extraneous factors which may impair the objectivity of R & D findings. Whether a research finding should be publicized or not, it is important to ensure that researchers are directed by valid theories and empirical experiences. This principle applies to individuals and institutions engaged in R & D works.

In this connection, it is necessary to provide for the stability of R & D institutes, for this has a significant bearing on the leadership which serves as an active agent for promoting R & D activities. Stability may be considered in both financial and personnel terms. A research institute should be financially stabilized to secure necessary resources for R & D activities. The financial stability should be coordinated with personnel resources. Unless a research institute is adequately staffed with professional capacity, it can't have a full degree of autonomy.

More Investment in Research and Development

The strengthening of research and development will entail a sharp increase in personnel and material inputs. As shown in Table III-16, the advanced countries devote more than 2 percent of GNP to research and development, which is favorably compared with 1 percent in Korea.

At the threshold of a highly industrialized society, Korea is plagued with keen competition from other nations and scant natural resources. The efforts to overcome these problems have relied mostly on education and there seems to be no factor other than education which serves as the prime mover for national development. Educational developmnt is the object of the all-out efforts of the people and there should be a commensurate input of material resources.

Table III-16
International Comparison of R & D Shares of GNP

Countries	Base years	Ratio (%)
	1982	0.95
U.S.A.	1982	2.53
Japan	1981	2.11
U.K.	1978	2.47
France	1980	1.84
W. Germany	1981	2.67

Source : Korea Ministry of Secience and Technology, *Science & Technology Yearbook*, 1983.

Policy Tasks

Restructuring of System for Educational Research and Development

Institutions concerned with educational research and development are classified into autonomous institutions, university-based institution, Korea Research Foundation, which funds and support R & D., The Korean Society for the Study of Education and provincial/municipal research centers. The problem is that their works are fragmentary and not related to one another. R & D functions should be properly shared and integrated among them in a way that ensures a maximum utilization of the strength of each institute. It is also important to develop a network that brings them together in a collaborative attempt for the overall development of education. Korea Research Foundation may be able to play this role. Due to its primary role in funding research, it may not be up to such a coordinative function which should be performed in a professional capacity. This role might as well be relegated to one of existent research institutes which takes leadership.

The research fund from the national treasury should be spent in a way that encourages research in basic sciences by universities, while holding autonomous research institutes responsible for studies related to curriculum, methdology, instructional materials and policy tasks. Action research based on educational scene may well be relegated to municipal and provincial research centers.

The time gap between the advent of educational new theories to application is estimated at 40 – 50 years, much longer than 3 – 5 years taken in industrial sector. There is a need to establish a mechanism to bridge this distance between new theories and their applications to school. The municipal and provincial research centers may be divided for this role.

To ensure the fullest utilization of research personnel of various research institutes, consideration should be given to an assignment on a rotation basis in a long - term plan and joint research project in a short–term sight. In parallel, a system should be devised to make research personnel available to other organizations and schools in connection with research tasks to be performed on an ad hoc basis. It is not only researchers with professional competency who participate in research; classroom teachers should be encouraged to undertake it and necessary support should be provided.

Essential to R & D activities is the education information center. In particular, a data bank which computerizes all information and data related to education produced after 1945 should be established as soon as possible. The fact that all information and data are still in the hands of a few people indicates the urgency of the need to make them widely available to those engaged in R & D activities. From the viewpoints of efficiency and the effective utilization of given resources, the data bank is a must for R & D functions.

Establishment of Graduate School of Pedagogy

As R & D activities are intensified, securing able researchers is becoming a matter of central concern. Therefore, a relevant educational program should be developed to enhance the quality of researchers as well as to meet the shortage of qualified persons. A professional education institute may be created at the graduate level or it may be attached to one of existing research institutes. In view of the fullfledged capacity of offering such a program, it is more desirable to attach this program to Korean Educational Development Institute.

It may well take the form of a graduate school of pedagogy committed to producing researchers capable of conducting scientific research in all aspects of education. Courses may include educational administration, curriculum, educational technology, nonformal education, educational philosophy, comparative education and educational history. Regulations governing school operation, enrollment quota, credit requirement and degree conferring should be set forth.

The organization chart of Graduate School of Pedagogy may be given as follows.

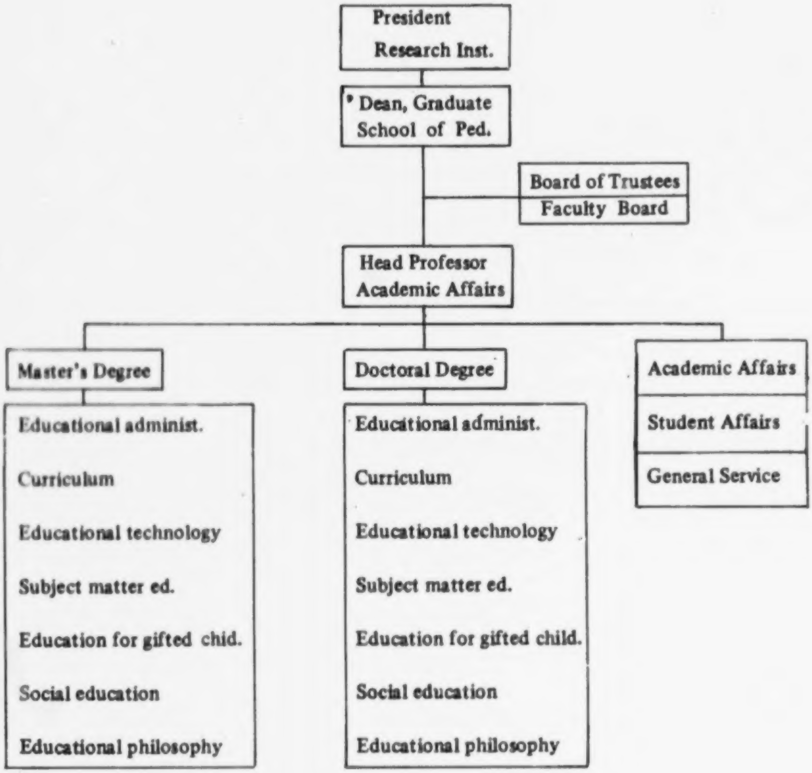
President
Research Inst.
Dean, Graduate School of Ped.
Board of Trustees
Faculty Board
Head Professor
Academic Affairs
Master's Degree
Educational administ.
Curriculum
Educational technology
Subject matter ed.
Education for gifted chid.
Social education
Educational philosophy
Doctoral Degree
Educational administ.
Curriculum
Educational technology
Subject matter ed.
Education for gifted child.
Social education
Educational philosophy
Academic Affairs
Student Affairs
General Service

Diagram III-3 Organization Chart of Graduate School of Pedagogy

Higher Quality of Educational Researchers

Ensuring the higher quality of educational researchers offers a means to improve the international competitiveness of Korean education. The effort to upgrade the quality of researchers may be promoted in two ways; one is to streamline the existing researcher preparation system in a way that increases the amount of exposure to research experience and the other is to devise an incentive scheme which includes better social and economic treatment, opportunity for overseas study and closer linkage between research institute and university. The linkage of research institutes with universities in particular is commendable, for it provides for the sharing of human resources available from the two streams. The linkage should be ensured on the basis of reciprocity and mutual enrichment. Institutional arrangements should be made to provide opportunities for professors to engage in R & D activities at a research institute for one or two years and for researchers to have experience in teaching at universities. Another way to upgrade the quality of researchers is to invite foreign scholars to teach the research candidates of hosting countries.

Increasing the Investment in R & D

There is a worldwide trend toward increasing the investment in R & D activities. West Germany devotes 2.7 percent of GNP to R & D activities and the proportions in the U.S.A. and Japan are 2.5 percent and 2.1 percent respectively. In Korea, the percentage is merely 0.95. Considering that much of this investment is in natural sciences and technology, actual investment in educational R & D is minimal. The investment share of educational R & D should be increased to the desired level.

A legal provision should be enacted to allocate 2 percent of total school expenditure for R & D. This share is still lower than the average for advanced countries and it should be increased even further. In relation to securing financial resources for R & D, there is an increasing need to encourage industrial firms to create a scholarship foundation. Considering that they are the consumers of high-level manpower, their contribution to R & D is fully justified. Their contribution may be pooled with grants from other sources to be spent on R & D activities in general, or else earmarked for specific purposes.

In addition, foreign loans may be a financial source of R & D activities, especially when the projects involved are of a large scale and intended to be implemented over a long period.

2. STRENGTHENING OF RESEARCH AND DEVELOPMENT FUNCTIONS

Prospects

The Need for Information Management System

With the heightening concern for education and the increasing complication of educational system, publications and literature related to educational research are proliferating in number. This trend will be more prominent in proportion to the intensification of inter–country exchange.

The proliferation of educational information and data is ascribed to the increasing amount of resources put into research and development. George Anderla projected the amount of information to research 1,745 by 1985 over 100 in the base year of 1955. The geometric growth of information made it difficult to select useful information. Furthermore, it beclouds the vision of what information are necessary and where to find them. The problem can better be imagined by considering the actual amount of time and effort taken to collect necessary information in the process of conducting research. A system which provides for an effective utilization of information facilitates not only research and development but educational planning and implementation. The validity of policy measure is ensured when decision-making is based on right information and data. The collection of right information sets the stage for research and development.

Biased Distribution of Information and Data

The concentration of information and data in urban areas, coupled with regional disparity in educational conditions, becomes a drag on a balanced development of education. There is no denying that it is through the process of collecting information and data that a pace is set for the success of research or development. But rural areas are handicapped in educational research and development due to the limited availability of information and data. This reality is reflected in the volume of research produced by local researchers, which is by no means comparable to those produced in Seoul.

The unbalanced distribution of information and data is also noticed among countries. The same can be said of materials related to actual teaching and classroom management. This trend deepens regional disparity of education quality and measures should be taken to reduce the gap. This suggests the need for a nationwide information flow system which ensures equal access to educational information in local areas.

Accountability of Educational Research and Development

Education is the prime mover of political, social, economic and cultural changes, while it is subject to be influenced by them. The mutually complementary relation between education and other spheres of life heightens concern for educational research and development to the degree that directs national attention to the call for increasing investment in educational research and development. As the public support increases, so does the accountability of educational research and development. They will be under the watchful eyes of the government and people with regard to whether they produce results worthy of the resources spent.

Korean education is still plagued with a host of problems which weight heavily on the shoulder of educational researchers. If educational

R & D made no or little, if any, contribution to the solution of these problems, it would be difficult to enlist the public support for them. The cost-effectiveness of educational R & D will remain an overriding concern of the public as well as the beneficiaries of education.

Policy Tasks

Establishment of Educational Information Service Center

The proliferation of information complicates the process of collecting and managing information and this suggests a need to establish a system which facilitates the flow of information. The accelerated growth of information, the wide dispersion of them across national border and the variety of informational needs increase the necessity of taking a cautious approach to the establishment of a system. The approach includes a number of tasks to be performed in connection with its establishment.

First, basic studies should be conducted to seek answers to the following questions.

(1) Who needs educational information and data (individuals and institutions) and how to give priority to them?

(2) What are the kinds of information and data needed at present and in the future?

(3) What are the sources of information and how are they acquired?

(4) What is the most effective way to store and retrieve information?

Second, educational data should be collected and evaluated. It is necessary to coordinate with universities, research institutes and other organizations to take inventory of all information and data in stock. The process of collection should allow for sieving them against criteria.

Third, a system should be devised to process collected data, store and retrieve them. It includes (1) creation of classification criteria, (2) analysis of materials according to the classification criteria and computerization. (3) storing of processed information, and (4) creation of retrieval system. Storing and retrieving are not one-shot type of work. They form a cycle composed of data analysis, storing, modification and supplementation of stored information for renewal and search for a more effective way to retrieve them.

Fourth, efforts should be made to improve informational service. The rationale of informational service is assessed in terms of the degree to which it meets the informational needs of users. If there were no one to benefit from this service, the system would lose the ground for its existence, however, effective it might be. Apart from the professional dimension of informational service, there should be as much effort to increase the utility of informational service of relation to audience. It is important to make the kinds of information and services and how to use the system known to potential users. Regional information center linked to the national network deserves of attention as a means to facilitate the flow of information to local areas.

Fifth, the system should be adequately staffed by personnel well exprienced in system development and operation. There is no training program to develop the professional qualities of these people. The personnel with the necessary qualities are in shortage. The first step is to assess the demand for these personnel and, on this basis, training program should be developed.

Balanced Development of Basic and Policy Studies

The basic studies aim at producing new theories, the accumulation which has an important bearing on policy studies. In this sense, basic studies should be planned and implemented in a long-term perspective. Research and development has been gaining intensity with the inauguration of various research institutes and research promotion foundations. But much of studies done hithertofore were oriented toward policy issues, purported to produce immediate effects on the solution of prevailing problems. Basic studies should encouraged to the extent that ensures balance against policy studies.

1) Basic Studies

Over-emphasis on basic studies invites criticism of them for the lack of relevancy to the reality. Viewed in a long-term perspective, however, the accumulative effects of basic studies provide useful insight into policy measures. It is particularly true in education which is, by its inherent nature, future-oriented. The importance of basic studies is also highlighted by the growing necessity of taking fundamental approach which gets at the root of educational problems. Very often, the problem is much to do with the lack of theoretical foundation which makes for the full grasp of a problem in a wider angle. Our experience brought us home that the indiscreet adoption of foreign-bred theories drifted problems into worse situation. From the viewpoint of viability of new theories in the indigenous setting, basic studies should be encouraged.

The areas which call for a fundamental approach to research are (1) instructional process, which forms the core of educational activities, (2) individual differences and environmental factors, (3) the philosophical and social implications of different curricula, teaching and evaluation methods, and (4) subject matter education.

2) Policy Studies

Policy studies are related to policy issues and the process of policy-making. The former, intended to develop alternative solutions to a problem, has a direct bearing on the formulation of policy, whereas the latter is concerned with an entire cycle of planning, implementing and evaluating a policy measure.

Basically there are two approaches to policy study. One is a normative study based on deductive thinking with a view to presenting alternatives. The other is an empirical approach which analyzes data, identifies variables in terms of a cause-effect relation, and advances theories or strategies therefrom. Most studies which have been conducted after the later 1960's are normative. What follows indicates points of emphasis in relation to policy studies to be performed in the years to come.

First, empirical approach should be encouraged, with specific reference to policy analysis and evaluation. It does not cease to develop alternatives but should be extended to analysis of the possible impact of a policy measure. It should employ a wide variety of means to collect information, besides questionnaire.

Second, study on the process of policy formulation should be encouraged. The way in which a policy is formulated is marked by "closedness" and "exclusiveness." In other words, it excludes others than the directly concerned circle from the process of policy formulation, despite the fact that their expertises will increase the possibility of formulating a more viable and valid policy, with the result of keeping the door closed to the possible influx of relevant information and data, which might have given an empirical base for policy-making.

Third, policy study should be directed to implementation. There is a distance between the participants in the formulation of policy and those responsible for its implementation. While a policy travels the distance, they are susceptible of distortion defying the intentions of the participants, with the result that what has actually been implemented is at odds with what was intended. Policy study should direct its attention to bridging the distance and analyzing implementation with a view to indicating the cause for departure from what was intended, and suggesting the way to put implementation on the right track. This provides an earlier remedy before implementation is driven further from the suggested path.

Fourth, linkage among studies becomes a matter of special attention. Since most policy studies are of short-term duration, they are seldom related to one another. A study, once completed, is buried under dust, with its finding hardly leaving any impact on the forthcoming studies. This causes the same or a similar study to be repeated in some years. Efforts should be made to maintain linkage among studies which share the same vein.

Utilization of Study Findings

Educational research, whether basic or policy-related, should be, in the long run, brought to bear on education in classroom. Research conducted on a theoretical level should be linked through the stages of development and diffusion to benefit pupils. The findings of research are assessed by teachers and pupils and the results are fed back into research. Educational innovation in its true sense takes place by going on a full cycle of research-development-diffusion-evaluation. A case in point is the Elementary-Middle School Development Project conducted by KEDI in the 1970's.

If the findings of research are not utilized in a full measure, the research can not but be questioned in terms of cost-effectiveness and accountability. In order for the findings of research to reach policy makers, teachers and researchers, a system should be devised to ensure the flow of information to target audiences. An information network linking university libraries, individual scholars, research institutes, schools and Ministry of Education officials should be erected.

Mandating the preparation of research abstracts is one way to provide for the sharing of research findings. The primary issue of dissemination is how to make research findings read by the concerned people.

There are not only quantitative concern but qualitative concern for research in relation to the dissemination of reports. The qualitative concern suggests that any research begin with analysis of practical problems besetting teachers, pupils, administrators and policy makers. The utilization of research findings entirely rests upon the degree to which they meet the real needs of target audiences.

In disseminating the findings of research, it is important to put them into small scale tryouts to ascertain their feasibility and viability in school setting. Such a small scale tryout is a must to be conducted as a means to pave the way to a nationwide diffusion. Public hearing deserves of favorable attention, when it comes to attempting at a nationwide dissemination of new breakthroughs, to which the public is extraordinarily sensitive. It is essential that researchers be effectively linked to teachers, pupils and administrators in a way that stimulates a collaborative attempt at the solution of problems. Essential to this is to build the common awareness of the accountability of R & D to the public.

V

NEED FOR STABLE FINANCIAL SUPPORT

The implementation of an educational development plan requires that necessary resources be secured to support educational activities. It is important to determine the amount of resources needed to implement the suggested policy tasks for 17 years to come and to secure the sources of financing them.

The sources of educational resources are students, the government and the society. There has been a tendency to rely on the first two in securing resources. With the upcoming extension of free compulsory education to grade 9, it is almost impossible to increase the government share, so long as the nation remains divided. To meet the increasing demand for educational resources, there is no alternative but to encourage the contribution of social organizations, industrial concerns and private citizens dedicated to the cause of education.

This chapter assesses educational needs in the future, projects the financial requirements, establishes sectoral priorities, formulates an investment plan and explores new sources of educational financing.

1. PROSPECTS FOR EDUCATIONAL FINANCING

Improvement of Living Standard

The annual growth of GNP slowed down to 6.7–7.5 percent, lower than that recorded over the last two decades. Projecting at this growth rate, GNP in the year 2000 will be four times as much as that of 1980. Thanks to the expected reduction in the rate of population growth, GNP per capita will grow faster, reaching $4,300 in 2000 at the 1980's fixed price. This will bring Korea to the threshold of the advanced countries.

The higher living standard will push up the social demand for education and investment in education. This assumption is predicated on the unusually high degree of enthusiasm of Koreans for education which grows in proportion to living standard, as contrasted with some countries which show the reverse case. At the time, the government will increase the investment in social security, housing, health and social overhead capital which promote the well-being of people.

Expectations on Education

Education will receive greater recognition as the means for self-realization and the consummation of character. Individuals acquire knowledge and skills and develop creative and logical thinking through education. The social dimension of education is considered in terms of its contribution to political, economic and social developments. In relation to political development, education provides for political socialization and the development of lucid outlook on nationhood, thus contributing to national solidarity. Education provides the fertile ground for economic development by supplying the needed manpower. Education stimulates the creation of new culture rooted in the traditional legacy, provides for the internationalization of new values, and guides structural changes toward the modernization of society. The growing recognition of education for its important contributions to personal and social goals will lead people to place greater expectations on the potential role of education.

Self-sufficiency in Local Education Finance

As educational attainment rises, a new climate will be built, which supports the decentralization of administration leading to the implementation of local autonomy. Along this trend, the reliance of local financing of education on the central government will diminish with the reform of tax system.

78 percent of local educational budget has been met with the grant from the central government, with local governments bearing only 22 percent. With the implementation of local autonomy in education, the reliance of local financing on the national treasury will diminish to 20–30 percent, while the share of local government rise to 70–80 percent. The support of central government will take the form of subsidy used to ensure balanced disbursement of educational expenditure among regions or to support special needs in particular areas. The transferred fund from the municipal or provincial government to education will increase substantially. These local governments will be responsible to secure land space and building facilities for schools.

Equality in Bearing Education Cost

To ensure equal opportunity for education, the government should be responsible for all educational expenditures, including opportunity cost for needy students, which is foregone by their attendance to schooling. But the government movement to achieve this goal will be hampered by the necessity of ensuring national defense which takes a deep bite out of the national resources. Given this mandate, the viable alternative would be to increase the government share of educational financing relative to reduction in the share of parents. In the latter's case, equality in the financial burden of parents will become a matter of special concern in view of different income levels. The equality in financial burden will be ensured in large measure by maintaining liability gap according to income level and providing scholarship or financial aids for needy students.

Greater Demand for Education Financing

As people place higher expectations on education, it will be shouldered with a host of educational tasks to be implemented. This will result in a sharp increase in educational financing. Most prominent among factors for the financial increase are the scheduled extension of free compulsory education to middle school and institutional arrangements for the popularization of high school education expected in the 2000's. The quantitative expansion of education will set out public cry for its qualitative improvement. To upgrade the quality of education, it is inevitable to reduce class size, recruit more teachers, enhance their economic status and develop multiple instructional materials, with the result that educational cost per pupil will rise to that of advanced countries.

2. PROJECTION OF FINANCIAL REQUIREMENTS

Policy tasks to be undertaken to effect educational development include provision of education for whole person, improvement of contents, methods and facilities, reform of educational system, reinforcement of education in basic sciences, development of high technology, strengthening of vocational education, development of high level manpower, administrative reform, promotion of research and development,

development, etc.

The financial requirements are determined by indices, both quantitative and qualitative, of these tasks, which are milestones in educational development. What follows presents the indices to guide educational policies pertinent to investment.

Major Indices of Policy Tasks

Quantitative Expansion of School Education

This section covers the natural increases of students, teachers, and facilities on all school levels.

Pre-school enrollment ratio limited to kindergartens will increase from 13 percent in 1983 to 53 percent in 2001. Including child centers, the ratio will rise from 22.4 percent to 75.0 percent during the respec-

Table III–17
Indices of Pre-school Education Development

Indices	1983	1984–'91	1992–2001	Total
Enrollment ratio (%)	12.9	31.2	53.8	
Number of children enrolled (thousand)	206	550	909	
Number of students per class	34.9	27.5	15.0	
New classes	5,910	14,124	38,117	54,679
New classroom	10,973	12,986	35,253	48,239
New kindergarten	4,276	4,636	10,023	14,659
Number of students per teachers	32.2	18.0	12.0	
Teachers newly recruited	6,421	24,098	45,217	69,315
Enrollment ratio including child-care center (%)	22.4	45.8	75.0	

tive period. The proportions of enrollment in private kindergartens will rise from 55 percent to 75 percent during the respective period. The number of pupils per class in primary schools of large cities will be down to 35, lowering the average class size to 33. The teacher–student ratio will drop from41.7 to 30.0.

With the upcoming extension of free compulsory education to middle school scheduled for 1991, enrollment ratio on this level will reach 100 percent. Accordingly, the proportion of private schools,

Table III–18
Indices for the Improvement of Educational Conditions of Primary School

Indices	1983	1984–'91	1992–2001	Total
Enrollment ratio (%)	100	100	100	
Number of pupils–(thousand) (percentage of large cities)	5,257 (41.8)	5,041 (47.9)	5,015 (49.6)	
Pupils per class (that of large city)	46.9 (57.5)	40.1 (45.9)	33.0 (45.0)	
New classes	112,122	12,839	26,979	39,818
Reducing double ships system	8,952	3,976	4,976	8,952
New classrooms	124,907	32,765	41,952	74,717
New schools	6,500	679	975	1,654
Pupils per teacher	41.7	35.8	30.0	
New teachers	126,163	13,809	27,183	40,992
New facilities (84 million won per school)	Monetary value	56.8 billion won	81.5 billion won	138.3 billion won

Table III–19

Indices of Extension of Compulsory Education to Middle School

Indices	1983	1984–'91	1992–2001	Total
Enrollment ratio (%)	98.4	100.0	100.0	
Number of pupils–(thousand) (percent of large cities)	2,672 (34.5)	2,243 (26.3)	2,515 (16.5)	
Pupils per class	63.9	42.6	37.6	
New classes	41,852	10,862	14,259	25,121
New classrooms	58,088	16,236	22,383	38,619
New schools	2,254	491	658	1,149
Pupils per teacher	42.2	28.2	23.3	
New teachers	63,350	16,257	28,337	44,594
New facilities (84 million won per school)	Monetary value	41.1 billion won	55 billion won	96.1 billion won

which stand at 34.5 percent in 1983, will drop to 16.5 percent. The numbers of pupils per class and per teacher will drop from 63.9 and 42.2 in 1983 to 37.6 and 23.3 respectively in 2001. The popularization of high school education will boost up enrollment ratio from 88.5 percent in 1983 to 95.5 percent in 2001, with the numbers of pupils per class and per teacher down to 35 and 19 respectively. The proportion of private high schools will drop from 59.9 percent in 1983 to 50.0 percent in 2001, thus laying the foundation for the implementation of free compulsory education in the 2000's. Special education which enrolls 8.1 percent of the target group in 1983 will increase enrollment ratio to 57.3 percent by 2001.

Table III–20
Indices for the Improvement of Educational Conditions in High School

Indices	1983	1984–'91	1992–2001	Total
Enrollment ratio (%)	88.5	91.6	95.5	
Number of pupils–(thousand) (percentage of large cities)	2,013 (59.5)	2,165 (55.3)	2,267 (50.0)	
Pupils per class	58.1	45.2	35.0	
New classes	3,673	13,248	17,843	3,091
New classrooms	47,346	17,988	23,133	41,121
New schools	1,494	474	629	1,103
Pupils per teacher	31.9	23.5	18.8	
New teachers	63,109	28,826	28,520	5,376
New facilities (84 million won per school)	Monetary value	39.7 bil. won	52.5 bil. won	92.2 bil. won

Enrollment ratio in higher education will increase from 61.1 percent in 1983 to 68.5 percent in 2001. To reach this target, admission quota for colleges/universities, junior colleges (technical colleges) and teachers' colleges will rise to 71,400, 70,000 and 2,675 respectively. The enrollments of Air & Correspondence University and open universities will rise from 128,688 in 1983 to 314,149 in 2001. Expansion along these indices will raise the number of collegiate students per 10,000 people from 298 in 1983 to 414 in 2001. The teacher-student ratios for the three categories of higher education institutes will decline from 34.4, 33.9 and 22.3 in 1983 to 18.4, 26.3 and 19.0 respectively in 2001. The number of graduate students will rise from 60,282 in 1983 to 184,536 in 2001, with the doctoral candidates accounting for 17 percent of those for master's degrees (Table III-22).

Table III–21
Indices for Special Education Development

Indices	1983	1984–'91	1992–2001	Total
Enrollment ratio 1) (%) (including special classes of regular schools)	8.1	30.4	57.3	
Number of pupils 2)	22,475	80,308	157,693	
percentage of (special school only)	(48.8)	(47.6)	(48.7)	
Pupils per class	13.3	12.3	9.2	
New classes	862	2,564	5,334	7,898
New classrooms	1,325	2,792	5,808	8,600
New schools	71	411	237	351
Pupils per teacher	9.8	8.2	5.6	
New teachers	1,169	3,938	9,347	13,258
New facilities (84 million won per school)	Monetary value	9.5 bil. won	19.8 bil. won	29.3 bil. won

Note : 1) Number of pupils: 2.66% of 6–17 ages x 100
2) Figures in parentheses are those enrolled in regular schools.

Table III–22

Indices for Expansion of Higher Education

Indices	1983	1984–'91	1992–2001	Total
Jr. College				
Enrollment ratio (%)	19.9	19.9	26.3	
Number of pupils	216,210	289,905	351,476	
(percent of private col. pupils)	(87.2)	(87.8)	(88.5)	
Pupils per teacher	33.9	30.4	26.3	
New teachers	6,372	3,156	3,827	6,983
Col. & Univ.				
Enrollment ratio (%)	40.4	35.6	43.3	
Number of pupils	772,907	1, 048,105	1,198,795	
(percent of private col. pupils)	(73.3)	(74.0)	(74.0)	
Pupils per teacher	34.4	28.5	18.4	
New teachers	22,473	14,368	28,294	42,662
Teacher's College				
Number of pupils	12,004	23,693	29,083	
Pupils per teacher	23.3	23.5	19.0	
New teachers	538	469	524	993
Graduate school				
Number of pupils	60,282	122,841	184,536	
(percent of private col. pupils)	(70.1)	(69.1)	(67.8)	
New teachers	325	392	573	965
Correspondence & Open Col.				
Number of pupils	128,688	229,467	314,149	
Pupil per 10,000 people	298	382	414	

Education for Whole Person

To implement education for whole person, a wide variety of physical facilities will be built to support educational activities apart from classroom instruction. They include youth center, camping field, residential training center, etc.

Table III-23
Major Indices for Implementation of Education for Whole Person

Tasks	1983	1984—'91	1992–2000	Total
Education for whole person				
Training centers	6	4	6	10
Youth centers	1	5	9	14
Camping fields	16	26	32	58
School feeding in prim. sch. (%)	1.9	1.9	20	
Promotion of spiritual ed.				
Strengthening of spirit. ed.	₩ 51 bil.	₩ 490 bil.	₩ 930 bil.	₩142 bil.
Strengthening of education for Korean residents abroad	₩ 55 bil.	₩ 446 bil	₩ 855 bil.	₩130 bil.

Upgrading of Education Quality

The upgrading of education quality denotes efforts to improve physical conditions, the relevance of educational contents and the validity of evaluation.

Table III-24
Major Indices for Upgrading of Education Quality

Tasks	1983	1984–91	1992–2001	Total
Higher relevance of contents				
Curr. reform & material devel.	8 kinds	₩13.2 bil.	₩251.9 bil.	₩165.1 bil.
Estb't of Korean Language Inst.		₩ 2.6 bil.	₩ 5.5 bil.	₩ 8.1 bil.
To improve teaching & evaluation				
T.V's	12,518	30%	100%	240,082
VTR's	602			13,102
Estb't of achievement management agency		₩11 bil.	₩ 35 bil.	₩ 46 bil.
Computers		184,597 (1.3 per class)	531,752 (3 per class)	716,349
To improve ed. conditions				
pri. sch. facilities				
Repair of classrooms	1,500	23,986	122,171	146,157
New toilets	500	13,803	2,000	15,803
New desks & chairs	120,000	1,015,000	1, 322,000	2,337,000
Repair of classrooms in mid. sch.	329	5,872	38,411	44,283
Creation of research rooms		2,000	51,020	53,020
Construction of gymnasium	802	300	10,100	10,400
Const. of swimming pools	74	200	6,000	6,200

Equalization of Educational Opportunity

The equalization of educational opportunity is effected by the provision of scholarship on a larger scale, financial aids for needy students and the expansion of air/correspondence and open universities. To eliminate quality gap, supplementary education will be institutionalized and a research institute in special education will be established during the Sixth Five-Year Economic Development Plan. Schools for gifted children will be established with the intensification of research and development activities regarding it.

Table III-25
Major Indices for Equalization of Educational Opportunity

Tasks	1983	1984–91	1992–2001	Total
Elimination of inequality in ed. opportunity				
Provision of scholarship				
General high school	40,511 (3.6%)	(7.0%)	(15.0%)	
Voc. high school	49,603 (5.6%)	(10.0%)	(20.0%)	
Colleges/universities	176,441 (16.6%)	(15.7%)	(17.0%)	
*National treasury	33%	35%	35%	
Financial aids for needy students (middle school)	262,000 (9.8%)	1,391,000 (11.6%)	1,459,000 (11.6%)	
Expansion of air/corr. prog.	1	1		1
Expansion of open univ.	4	10	2	12
Elimination of inequality in education gap				
Compensatory education		₩30 billion	₩38 billion	₩41 billion
Promotion of special education				
Nursing rooms	72	210	850	1,060
Vocational information center	35	374 rooms	1,500 rooms	1,874 rooms
Special classrooms		100	600	700
Spec. ed. research centers		1		1
Education for gifted children				
Schools for gifted children	1	9	4	10
Development of programs for gifted children		25	44	67

Reform of Educational System

To restore the educational role of home, materials will be developed to assist in home education and support will be given to needy families in their educational roles. Free compulsory education will be extended up to grade 9 by the ending year of the Sixth Five-year Economic Development plan.

Support will be given to private education on a selective basis and a nonformal education center will be established in each city or country. 50 percent of nonformal education will come from rennovating the existent buildings with the remaining 50 percent to be built by the equal

Table III-26
Major Indices for the Reform of Educational System

Tasks	1983	1984–'91	1992–2001	Total
Establishment of life-long education system		organization of a study team	legislation of fundamental for ed.	
Home Education				
Course for trainers		8	10	18
Educational support for needy families	2,555 teachers	15,000 teachers 115,784 children	17,500 teachers 168,890 children	
Free compulsory educ. in in middle school				
Support for private ed.				
Support for sec. sch.	₩30.6 bil.	₩302.2 billion	₩615 billion	₩917.2 bil.
Support for lab. equip. in engineering col.	₩ 3 bil. (32 sch.)	₩ 11.7 billion	₩ 80 billion	₩ 91.7 bil.
Support for lab. equip. in technical Jr. col.	₩3 bil.	₩ 7.5 billion	₩110 billion	₩117.5 bil.
Support for special sch.	₩4.6 bil. (for 51 sch.)	₩65.7 billion	₩190.9 bil.	₩256.6 bil.
Social education				
Social ed. center in each country or city		115	97 (51)	222 (51)
Public libraries	147	33	50	83
Youth hostels	22		8	8
Leaders training centers (province)			15	15
Micro libraries for remote areas		15	45	60

sharing of expenditures between the government and the private sector. Besides, public libraries, youth hostels, micro-libraries and social education centers will increase in number.

Development of Basic Sciences and High Technology

For the development of basic science education, necessary lab equipment will be secured to support experiments. Student science centers, science materials centers and fields for observational learning

Table III-27
Major Indices for Devlopment of Basic Sciences and High Technology

Tasks	1983	1984–'91	1992–2001	Total
Development of science ed. in elementary & secondary sch.				
Lab. equipment	₩1.9 bil.	₩17.9 bil.	₩170 bil.	₩187.9 bil.
Science centers	11	4		4
Science materials centers one in each country	166	7	15	22
Mobile science class	2	10		11
Experimental aides in primary school. one in each school	800	1,713 (35%)	5,641 (100%)	
Reform of science ed. in higher education				
Basic science research centrs.	14	101	150	251
Invitation to foreign scientists	43	500	500	820
Overseas training for Korean scientists	137	1,933	2,911	4,844
Equipment	₩ 7.1 bil.	₩124.4 bil.	₩ 350 bil.	₩474.4 bil.

will increase in number. Financial support will be given to university-affiliated research institutes in basic sciences, faculty exchange programs, staff development through overseas studies and high technology research(Table III-27).

Strengthening of Career Guidance and Vocational Education

To support career guidance, a cereer information center will be established in each city or province, which bridges the gap between the supply of and the demand for technical manpower. Encouragement will be given to the establishment of joint practice centers to be shared among 50 percent of technical high schools. Computers will be placed in vocational high schools in a sufficient number which makes one available to five students. Lab equipment will increase in number, school-industry relation will be established to support technician

Table III-28
Major Indices for Strengthening of Career Guidance and Vocational Education

Tasks	1983	1984–'91	1992–2001	Total
Career information center, one in each city or province	2	6	7	13
Upgrading vocational education				
Joint practice center	1	3		3
Supply of computers	7,056	61,378 one for 15	133,964 one for 5	195,342
Equipment		₩1 bil.	₩145 bil.	₩46 bil.
Upgrading technician ed.				
School–industry cooperation		₩5.9 bil.	₩11.2 bil.	₩17.1 bil.
Equipment	₩3 bil.	₩23.8 bil.	₩125 bil.	W148.8bil.

education and staff development will be promoted through overseas studies.

Development of High-level Manpower

Opportunities will be expanded for faculty members to have overseas training. Beginning with the Seventh Five-Year Economic & Social Development Plan, sabbatical leave will be inaugurated. Graduate programs will be functionally specialized with the creation of a mechanism which provides for cooperation among them. Funds for research and development will be increased and university-affiliated research institutes will be streamlined so as to effectively respond to new needs. Scholar exchange program will be promoted, whereby foreign scholars are invited to participate in research and development in cooperation with national scholars. In order to facilitate the institutionalization of school-industry cooperative system, sandwich program will be introduced during the Sixth Five-Year Economic & Social Development Plan, with encouragement and support given to joint research involving faculty members and industrialists. Along this line, on-the-job-training will be emphasized. The Seventh Five-Year Economic & Social Development Plan envisages the establishment of joint shops (Table III-29).

Table III-29
Major Indices for the Development of High - level Manpower

Tasks	1983	1984–'91	1992–2001	Total
Upgrading of higher ed.				
Overseas studies for faculty members	100	1,530	3,500	5,030
Paid leave			5,000	5,000
Graduate studies				
Paid assistants	3,500		42,035	42,035
Functional specialization		₩5.3 bil.	₩1,166,2 bil.	₩1,173.5 bil.
Support for graduate students		51,018(30%)	147,544(30%)	193,562
Research & Development				
Support for university–affiliated research inst.	710	1,400	1,000	
Support for research inst.	10	20	26	
Support for Korean studies abroad	₩400 mil.	₩9.5 bil.	₩37.2 bil.	₩46.7 bil.
School–industry cooperation				
Exchange of personnel	50 per year	50 per year	50 per year	750
Sandwich program (50% by the government)		₩5 bil.	₩20 bil.	₩25 bil.
Joint research (50% by the government)		100	300	400
Joint practice shop (50% by the government)			8	8

Enhancing Professionality of Teaching and Quality of Teachers

As an initial step toward enhancing the professionality of teaching, master-teacher and senior-teacher systems will be introduced, beginning with the Seventh Five-Year Economic & Social Development Plan. Institutional base will be laid to upgrade the training of preschool education teachers to college programs which lead to bachelor's degrees, while support is increased to expand and upgrade the existing teacher training programs. The gap between grade levels of primary and secondary school teachers will be reduced, while the salary scale of teachers at large is enhanced during the Fifth Five-Year Economic & Social Development Plan. The Sixth Five-Year Economic & Social Development Plan envisages the provision of incentive allowances for teachers who have served over relatively longer periods and 9 percent increase of salary per annum so that it can be raised to the level corresponding to 80 percent of income which a middle-level manager of private company earns. Fringe benefits will be considered to promote the welfare of teachers (Table III-30).

Table III-30
Major Indices for Enhancing the Professionality of Teachers

Tasks	1983	1984–'91	1992–2001	Total
Professionalization				
Implementation of master teacher system			908,721 teachers (30% of total)	
Implementation of apprenticeship			318,824 teachers (150%oof demand)	
Teacher training system				
Establishment of teacher's university	₩3.4 bil.	₩32.3 bil.	₩27 bil.	₩59.3 bil.
Producing teachers in pre-school education			₩100 bil.	₩100 bil.
Expansion of teacher training institutes (primary & secn.)			₩150 bil.	₩150 bil
Reform of teacher training syst.				
Teacher training institute (one for each city of province)	2	5	8	13
Enlarging opportunity for inservice training	80,400	718,450 (30% of total)	1,071,000 (30%)	1,789,450
Raising socio-economic status of teachers				
Reducing salary gap between primary and secondary teachers	1/3	completely		
Increasing salary scale		9% per annum	9% per annum	
Teaching allowance (per month)	₩60,000 (per month)	₩105,000	₩105,000	
Meritocracy allowance (per month)		₩ 50,000	₩ 50,000	
Welfare centers	1	2	2	4

Enhancing Professionalization of Educational Administration

In educational administration, emphasis will be placed on supervisory administration. Statistical data and clerical works will be put into electronic processing system. Opportunities for overseas training will be enlarged for administrators. During the Sixth Five-Year Economic & Social Development Plan, in-service training of educational administrators will be inaugurated on a systematic basis (Table III-31).

Table III-31
Major Indices for Professionalization of Educational Administration

Tasks	1983	1984–'91	1992–2001	Total
Greater autonomy of educational operation				
Local autonomy				
Strengthening of supervisory activit.	₩100 mil.	₩2.6 bil.	₩8.8 bil.	₩12.4 bil.
HIgher efficacy of educational administ.				
EDPS of ed. admin.	₩60 mil.	₩800 mil.	₩2.5 bil.	₩3.3 bil.
Professionalization of ed. administrators				
Enlarging opportunity for overseas studies	12	96	120	216
Inservice training for ed. administrators		1		1

Intensification of Educational Research and Development

To strengthen educational research and development, measures will be devised to promote the maximum utilization of R & D activities of various institutions. There will be systematic and sustained efforts to provide opportunities for scholars to improve their professional competency through overseas refresher programs, international seminars and joint research ventures (Table III-32).

Table III–32
Major Indices for Intensification of Educational R & D

Intensification of R $ D	1983	1984-'91	1992-2001	Total
Linkage among research institutes			₩2 bil.	₩2 bil.
Enlarging opportunities for overseas studies	160	160	250	410
Educational materials and information center		1	9	10
Selective support for research projects	₩1.1 bil.	₩11.0 bil.	₩18.2 bil.	₩29.2 bil.

Projection of Total Financial Requirements

To bring the educational development plan into reality, it is imperative to establish targets in terms of policy task and determine financial requirement for each of them. The financial requirement represents a modest amount of fund needed to accomplish each task.

The percentage of total public education cost to GNP should rise from 6.9 percent in 1983 to 7.3 percent in 1991 and 7.1 percent in 2001. The government share of total public education cost should rise from 3.8 percent to GNP in 1983 to 4.2 percent in 1991 and to 4.6 percent in 2001. Accordingly, the parents' burden of public education cost will diminish from 45.5 percent in 1983 to 37.5 percent in 1991 and again to 25.3 percent in 2001.

Table III–33
Projection of Financial Requirements

Unit: Billion Won at 1980's constant price

Classification	1983	1991	2001	Annual increase rate (%) '84–'91	'92–2001	'84–2001
GNP	45,634.6	75,300.0	138,300.0	6.5	6.3	6.4
Gov. budget	8,217.7	14,469.6	28,918.5	7.3	7.2	7.2
Public education cost	3,160.2	5,473.5	9,799.1	7.1	6.0	6.5
Outlays from nat. increasing	1,995.8	3,601.7	7,215.4	7.7	7.2	7.4
MOE–budget	1,715.7	3,131.6	6,361.8	7.8	7.3	7.6
Local autonomy budget	127.3	259.7	595.3	9.3	8.7	9.0
PTA fee	152.8	210.4	258.3	4.1	2.1	3.0
Private cost	1,164.4	1,871.8	2,583.7	6.1	3.3	4.5
Corporation burden	235.7	519.7	960.4	10.4	6.3	8.1
Student burden	928.7	1,352.1	1,623.3	4.8	1.8	3.2
Private share of public ed. cost	1,436.8	2,054.0	2.482.2	4.6	1.9	3.1

The government share of total public education cost will rise from 63.2 percent in 1983 to 67.7 percent in 1991 and again to 77.3 percent in 2001. The Ministry of Education's budget which takes 86.0 percent of the total government share in 1983 will rise to 87.0 percent in 1991 and to 88.2 percent in 2001. The percentage borne by local governments will rise from 6.4 percent in 1983 to 7.2 percent in 1991 and 8.3 percent in 2001. The percentage borne by school foundations of total private education cost will rise from 20.2 percent in 1983 to 28.7 percent in 1991 and to 37.2 percent in 2001(Table III-34).

Table III–34
Total Public Education Cost Compared with Other Components

(%)

Classification	1983	1986	1991	1996	2001
GNP vs. public ed. cost	6.9	7.4	7.3	7.0	7.1
GNP vs. outlays from nat. increasing	4.4	4.6	4.8	5.0	5.2
GNP vs. MOE budget	3.8	3.9	4.2	4.4	4.6
Gov't budget vs. MOE budget	20.9	21.4	21.6	21.8	22.0
Public ed. cost vs. outlays from nat. treasury	63.2	62.0	67.7	74.4	77.3
Public ed. cost vs. MOE budget	54.3	53.1	57.2	62.7	64.9
Public ed. cost vs. private share of public ed. cost	45.5	43.9	37.5	30.5	25.3
Outlays from nat. treasury vs. MOE budget	86.0	86.3	87.0	87.6	88.2
Outlays from nat. treasury vs. local autonomy budget	6.4	6.7	7.2	7.7	8.3
Private ed. cost vs. corporation burden	20.2	24.0	28.7	33.4	37.2

3. PRIORITY ORDER AND APPORTIONMENT OF EDUCATIONAL INVESTMENT

Priority Order of Government Investment in Education

Given the limited availability of educational resources, it is crucially important to priorities government investments in policy tasks to be accomplished. The priority order established for the Fifth Five-year Economic Development Plan accords higher priority to tasks to improve educational conditions highlighting the enhancement of teacher's socio-economic status, improvement of sanitary facilities, replacement of dilapidated classrooms, dissemination of computers, and support for research in basic sciences and high technology. The Sixth Five-year Economic Development Plan will see the extension of free compulsory education to middle school, preparation for the provision of supplementary education in high school, development of special education and intensification of research and development. In the Seventh and Eighth Five-year Economic Development Plans, double-shift instruction and over-crowded situation will be eliminated, teacher's study rooms and athletic facilities expanded, nonformal education expanded and teaching staff differentiated, a close school - industry cooperative relation established and graduate education strengthened. The additional investments in education, borne by the government, are shown in Table III-35 according to the priority order.

Table III–35
Additional Financial Requirements to Fund Policy Tasks (National Treasury)

Unit: Billion Won at 1980's constant price

	Descriptions	Indices during the planned period			
		'84–'86 (5th)	'87–'91 (6th)	'92–'96 (7th)	'97–2001 (8th)
	Additional MOE Budget (A)	967.0	4,923.7	11,660.9	19,805.8
	Additional ed. cost (B)	622.6	1,986.3	2,977.2	4,323.3
	R (A – B)	344.4	2,937.4	8,683.7	15,482.5
1.	Education for whole person	2.0	57.8	236.1	438.8
2.	Improv. ed. contents, and method & facilities	52.2	680.3	3,525.0	8,329.0
3.	Equality in ed. opportunity	29.6	233.5	489.8	742.0
4.	Reform of ed. system	6.2	579.2	948.5	1,220.6
5.	Dev. of basic science & high technology	61.5	52.1	343.9	489.7
6.	Strengthening of occup. & skill ed.	12.0	32.4	105.1	158.4
7.	Dev. of high-level manpower	10.9	86.6	816.6	1,220.3
8.	Dev. of professional quality of teachers	167.8	1,202.8	2,197.2	2,847.7
9.	Dev. of adm. professionality	1.0	9.1	7.8	9.5
10.	Strengthening of ed. R & D	1.2	3.3	13.7	26.5

Apportionment of Public Educational Cost

The apportionment of public education cost among school levels is based on the cost differential (C.D.) per pupil. Therefore, it was necessary to project cost differential per pupil for each school level for the benchmark years up to 2001.

Table III–36
Cost Differential per Pupil

School Level	1983	1986	1991	1996	2001
Kindergarten	1.00	1.07	1.25	1.25	1.25
Primary sch.	1.00	1.00	1.00	1.00	1.00
Middle sch.	1.56	1.50	1.40	1.30	1.20
High sch.	2.04	1.82	1.50	1.40	1.40
Special sch.	2.72	2.81	2.96	3.10	3.25
Higher ed.	5.52	4.82	3.60	3.45	3.30

Table III–37

Proportional Change of Public Education Cost by School Level

Unit: 1,000 Won at 1980's constant price

School Level	1983	1986	1991	1996	2001
Kindergarten	33.2 (1.1)	73.8 (1.8)	214.3 (3.9)	380.8 (5.1)	604.2 (6.2)
Primary sch.	846.4 (26.8)	1,004.4 (24.3)	1,562.4 (28.6)	2,152.1 (28.8)	2,666.8 (27.2)
Middle sch.	671.2 (21.2)	861.9 (20.9)	979.1 (17.9)	1,340.0 (18.0)	1,605.4 (16.4)
High sch.	661.2 (20.9)	857.7 (20.8)	1,012.6 (18.5)	1,234.8 (16.5)	1,687.5 (17.2)
Special sch.	5.0 (0.2)	14.3 (0.3)	38.8 (0.7)	80.9 (1.1)	139.9 (1.4)
Higher ed.	943.2 (29.8)	1,318.1 (31.9)	1,666.3 (30.4)	2,247.9 (30.5)	3,095.3 (31.6)
Total	3,190.2 (100.0)	4,130.2 (100.0)	5,473.5 (100.0)	7,463.5 (100.0)	9,799.1 (100.0)

Note : Figures in parentheses are composition ratio.

Table III–38
Public Education Cost per Pupil

Unit: 1,000 Won at 1980's constant price.

School level	1983	1986	1991	1996	2001
Kindergarten	161.0	223.3	389.8	524.1	664.6
Primary sch.	161.0	208.7	311.8	419.3	531.7
Middle sch.	251.2	313.1	436.5	545.1	638.0
High sch.	328.4	379.8	467.7	587.0	744.4
Special sch.	437.9	586.4	922.9	1,299.8	1,728.0
Higher ed.	888.7	1,005.9	1,122.5	1,446.6	1,754.6

Projecting the changing trend of public education cost on this basis, as contrasted with pre-school and special education which show the most rapid growth. On the primary and secondary level, (1) reducing class size, (2) raising the salary scale of teachers, and(3) the expansion and improvement of school facilities exert pressure for the continual increase in education cost.

4. STABLE SOURCES OF EDUCATIONAL FINANCE

Basic Direction

Need to Increase Educational Finance

The implementation of policy tasks to realize education envisioned for the 2000's requires a substantial increase in educational finance. The proportion of public education cost to GNP should increase from 6.9 percent in 1983 to 7.1 percent in 2001. The government share of public education cost should rise from 3.8 percent in 1983 to 4.6 percent of GNP in 2001, relative to the shrinkage of parents' share.

Since financial requirement was projected on this basis, the success of the educational development leading to the envisioned education in the 2000's entirely rests with whether it is possible to meet these financial requirements. There is an inexorable mandate to reach the targeted 7.1 percent of GNP to be invested in education in the 2000's.

Stable Sources for Educational Finance

Educational finance is to secure human and material resources needed for the provision of education, apportion them among school levels and among components and manage the use of resources in a way that raises cost-effectiveness. Disbursing resources is an investment bound to yield returns in the remote future. Education is an effort to help individuals acquire knowledge, skill and attitude which contribute to the self-realization of an individual and the greater good of the society. Therefore, educational investment should transcend the ups and downs on economic situation. In order for educational investment to be made even at the time of economic depression, it is essential to explore stable sources of educational finance.

Equality in Bearing Education

Access to education should not be affected by economic status. The flat imposition of financial burden on parents should give way to progressive taxation to hold the government responsible to finance a larger part of educational expenditures. At the same time, scholarship, credit loan and other financial aids should be considered for needy students. Efforts made along these lines will do much to ensure equality in access to education.

Divergent Sources of Educational Finance

The beneficiaries of education are students, the society and the government. Students and the government have been the major sources of educational finance, and still in the effort to solve financial problems, there is a strong tendency to rely on these two sources. With the imminent extension of free compulsory education to middle school and so long as the nation remains divided, causing national defense to take the lion's share of resources, the government is not likely to increase its share. Attention should be directed to the other sources, namely; social organizations, enterpreneurs and citizens. An incentive scheme should be devised to create a climate encouraging their investment in and contribution to education.

Beneficiaries' Share of Education Cost on Tertiary Level

As free compulsory education is extended, it is sensible to reduce the burden of parents relative to the increasing share of the government of educational cost. At the school levels where free compulsory education is implemented, parents should be exempted from tuition and other fees. By contrast, the share of beneficiaries should be much larger in higher education. The beneficiaries of higher education are students, enterprises, the government and the society. The beneficiaries meant here refer to students.

The educational cost per student should show little variation with school level. This suggests that the educational cost per pupil in primary school be brought up close to that of higher education. In this sense, primary education calls for a substantial increase of investment.

Local Financing of Education

As ground works proceed for the implementation of local autonomy, system will be reformed to increase local taxes. This tax reform will enable local governments to bear an increased proportion of education cost, reducing the responsibility of the central government to providing subsidy to correct regional imbalance in the financing of education.

Even at the local level, educational administration should be independence of general administration, if it is to enhance its professionality. But the growing demand for educational resources, with the financial burden of the central government reaching limitation, calls upon the municipal or provincial government to increase its financial support for education.

Policy Tasks

Extended Reliance on Education Tax

In view of a host of educational tasks to be financed, it is inevitable to extend the period over which education tax takes effect. The education tax was created to take effect from 1982 to 1985, with its revenue earmarked for the implementation of the most pressing educational task, that is to expand and improve the physical conditions of primary and middle school in preparation for the extension of free compulsory education to the latter. It took the form of surtax imposed on stock divident, interest earning, liquor sale, cigarette sale and insurance earning subject to regular taxation. But the revenue from education tax amounts to 291.2 billion won each year to reach 1,455.9 billion won over the five years. The revenue earned from this source in 1983 accounted for 11.9 percent of the year's educational budget.

Actual increase in demand for educational finance will begin in 1986 in connection with the extension of free compulsory education, coincidental to the termination of education tax. Unless the education tax is extended beyond the stipulated period, financial problems associated with the improvement of educational conditions and the extension of free compulsory education will remain uptouched. Coincidental to the extension of education tax, thought should be given to diversify objects subject to taxation and improve the method of taxation.

Table III–39
Education Tax Rates by Component

Taxes	Computation base
Interest and divident tax	5% of income
Liquor tax	10% of liquor price
Cigarrette sale	10% of sale
Insurance and banking	0.5% of earning from insurance and banking

Table III–40
Projected Revenue from Educational Tax

In billion Won

	1982	'83	'84	'85	'86	Total	Average
Targeted (A)	238	266	237	316	349	1,456	291
Actually collected (B)	238	259					
Increase & decrease (A-B)	0	△ 7					

Fixing the Percentage of Local Resources to Education

The law pertinent to the local financing of education lost effect by Presidential Decree promulgated in 1972. Legislative action was taken in April 1980 to revive the law which would take effect in 1983. But the new law does not fix the proportion of local revenue to be devoted to education. The Presidential Decree brought about the loss of 490 billion won. According to the new law, the general grant of local government to education comprises the salaries of primary school teachers, 50 percent of salaries of secondary school teachers (except for Seoul), 11.8 percent of internal tax revenue and education tax revenue. The special grant, which used to account for 10 percent of general grant, is now left to fluctuate according to the financial status of the central government, with the creation of education tax.

In 1983, the revenue of education tax totalled 258 billion won

Table III–41
Local Financing of Education

In 100 millions Won (Current Price)

Years	Internal Tax (A)	Legal grant A x 12.98% (B)	Actual Grant (C)	Less (B–C)	at 1982's price
1973	4,391	570	500	70	352
1974	7,180	932	527	405	1,571
1975	10,123	1,314	821	493	1,534
1976	13,705	1,779	1,180	599	1,583
1977	16,752	2,174	1,523	651	1,479
1978	22,526	2,924	1,902	1,022	1,926
1979	30,375	3,943	3,012	931	1,470
1980	36,758	4,771	4,357	414	520
1981	45,958	5,965	5,838	127	137
Total	240,045	31,154	26,272	4,882	10,742

Source: MOE, *Current Status of Educational Finance*, 1982.

and the special grant amounted to 11.8 billion won, 60 billion won less than the level maintained before education tax was instated. Putting these together, the net increase of grant was 199 billion won, after the revenue of education tax compensated the loss of special grant. The stabilization of educational finance will be effected by reviving the provision which fixed the proportion of special grant to internal tax at 1.18 percent.

The fact that Koreans feature unusually high degree of enthusiam for education directs attention to contributions and donations of private sector as new sources of educational financing. Nearly 30 percent of educational expenditures in private universities of world reputation are covered by donations.

Table III–42
Financial Status of Private Universities in U.S.A and U.K. (%)

Classification	Harvard Uni. 1)	Univ. of Manchester 2)
Revenue (U.S.$)	308,000,000	69,000,000
Tuition	29.39	7.25
Donation	35.03	10.48
Gov. subsidy	25.92	74.70
Others	9.16	7.57
Outlay		
Remuneration	55.98	64.24
Scholarship	8.21	–
Facilities	17.32	28.86
Others	18.49	6.90
Total enrollment (person)	15,550	11,930
Education cost per pupil U.S.$)	19,807	5,782

Source: 1) Havard University, *Financial Report for 1977–78*, Cambridge, Mass. 1979, p.5
2) University of Manchester, *Information for Members of the Staff*, 1978, p.5

The sources of donations are private citizens, enterpreneurs and parents. Donations by parents have been kept to low profile due to the fear that they might invite that intervention of parents possibly to undermine the fairness of education. Rather, it is desirable to consider policy measures which encourage donation from private sector. The fact that an enormous amount of resources were put into private tutoring in the past suggests the desirability of devising a new scheme to bring the hidden resources to the fore. Reforming taxation along the line of exempting donors from tax or giving them a favored taxation will do much to encourage donations.

Increasing Transferred Fund from Municipal and Provincial Governments

The local finanancing of education is predicated on the principle of self-responsibility for the education of local people. The fact that educational administration is independent of general administration does not mean that the municipal or provincial government may be indifferent to the financial needs of local education. Except for Seoul and Pusan there is virtually no transferred fund from the local government. Apart from increasing funds transferred to education, the local government should be responsible to secure land space and buildings for schools. It may necessitate the reform of tax system to increase the revenue of local taxes, and this presupposes the implementation of local autonomy. The assistance of local government in securing land space and buildings is a vital necessity, considering that the cost of these facilities is becoming prohibitive.

Table III–43
Education Cost Borne by Provincial or Municipal Government (1982)

In Million Won

Region	General account(A)	Transfer to ed. (B)	Education budget (c)	B/A (%)	B/C (%)
Seoul	569,635	24,390	369,625	4.28	6.60
Busan	152,328	6,579	146,720	4.32	4.48
Taegu	72,372	170	78,000	0.23	0.22
Incheon	55,560	5	42,942	–	–
Kyonggi	286,849	12	179,468	–	–
Kang Won	171,156	–	125,309	–	–
Chung Buk	121,398	–	91,189	–	–
Chung Nam	198,872	8	170,030	–	–
Cheon Buk	186,513	16	145,228	–	–
Cheon Nam	289,566	–	239,228	–	–
Kyong Buk	244,902	10	180,649	–	–
Kyong Nam	260,215	1,198	179,671	0.46	0.67
Cheju	39,203	–	33,899	–	–
Total	2,648,569	32,388	1,981,958	1.22	1.63

Source: 1) Ministry of Home Affairs, *Financial Yearbook of Total Government*, 1982.
2) Ministry of Education, *Statistical Yearbook of Education*, 1982.

Creation of Fund for Educational Facilities

In a way to help schools secure necessary facilities, it is necessary to establish "the fund for educational facilities." Its importance is further heightened at this crucial hinge confronted with a host of pressing tasks to be implemented in connection with the forthcoming extension of free compulsory education.

One of sources for the fund may be the profit earned from selling land. The price of land goes up when the government launches development projects. The government involvement in development projects may bring an unexpected windfall to the owners of lands. The margin over the natural increase of land price created by the government and public agencies is ascribable to the public good, since it is not the making of enterprising activities. Therefore, it is sensible to mandate part of the margin to be ascribed to education. The margin of this kind is subject to taxation in Taiwan and England and this model is suggestive of the way to create the fund.

Investment of Industrial Concerns in Education

The fact that industrial concerns are the end users of manpower supplied by schools heighten their concern for education and justifies their investment in education. There are many ways in which industrial concerns can contribute to education. Prominent among the ways are the establishment of schools which meet their manpower needs, contribution to R & D activities, the provision of scholarship and investing part of profit in education in proportion to the share of high-level manpower employed. The investment of industrial concerns in education should be subject to a favored taxation.

The participation of industrial concerns in education is justified by reasoning that profit comes from higher productivity which results from the use of well-trained manpower and that part of the profit should be put into education. It is sensible, therefore, to tax the industrial concerns without concern for education for employing the high-level manpower. This device is similar to the cost sharing system presently in effect, which obligates the firms without training facilities to pay fees on a regular basis.

Participation of Religious Organizations

The parochial schools affiliated with religious sects were the genesis of modern school in Korea and they still constitute a large proportion of schools on all levels. Compared with the U.S. and Western European countries, the educational participation of religious organizations in Korea is modest. Encouragement and support should be given to them for participation in educational participation. Particularly, pre-school education and social education leave ample room that awaits to be filled by religious organizations.

Creation of the Fund for Higher Education Development

It is necessary to create a special fund earmarked for staff development and the upgrading of research capacity of higher education institutes. This is the source of long-term loan to universities striving for self-renewal. The government contribution should be the main stay of the fund to be matched by donations from industrial concerns and social organizations. Publishing companies in particular should be encouraged to contribute to the fund.

Creation of Fund for Private Education

Despite the important role of private schools, they are handicapped by financial plight and the persisting shortages of teachers and facilities. Due to their heavy reliance on tuition as the major source of revenue, there is no prospects in sight for improving their financial situations. These problems give urgency to the necessity of creating the fund for private education in the form of a special juridical body, which assists private schools in the expansion of facilities and staff development. The fund may comprise the government contribution, the fund for pensions of private school teachers, donations and contributions of private school foundations. Its parallel is found in the Private Education Promotion Law in Japan enacted in 1970.

CONCLUSION

THE PROFILE OF KOREAN EDUCATION IN THE 2000's

The profile of education presented in this chapter is a benchmark to be accomplished by the year 2000. This benchmark reflects the wishes of Korean people with regards to what education should be like, the realization of which is possible when educational tasks defined in a realistic perspective are accomplished as scheduled for the remaining 17 years.

Educational development unleashes a powerful leverage for national development and it constitutes a national policy goal of supreme concern. Therefore, it is an essential part of national development at large. Viewing education in the context of totality encompassing all strands of development, educational development is inevitably enterwined with other spheres of life, viz., politics, economy and culture. It is made possible when it is promoted in organic relations with other strands of development.

1. THE CHANGE OF EDUCATIONAL ENVIRONMENT

Education imposes profound impact on and is influenced by other spheres of life. Therefore, an attempt to describe the profile of education projected into the future and to explore ways to reach it should be made in reference to the environmental factors which affect it.

In view of what is looming over the horizon, the world will continue to be shrunk in distance and space into a microcosm community and inter-country dependence will increase. The world order, in which the two super-powers lorded over, began to undergo a structural change, which loosened the bond of countries in each bloc. With the advent of a new world order, stability will be shaken to the root, increasing the vehemence of competition among countries. Amid the increasing trend of competition, countries will be increasingly dependent on one another across ideological barrier. Economic interest will take precedence over political stakes. As the advanced countries seek to shield their economic interests through protectionism and monopolize new technologies, the under-developed and developing countries will suffer setback in ascending the development ladder. The expected decline of economic aid and importation quota imposed by the developed countries will weaken the economic viability of less-developed countries with the result that gap between the north and south will further widen.

The trend of bipolarization and the increasing conflict of interests will increase the complexity of problems related to international issues. Inter-country dependence will increase on a selective basis, namely among the countries which share the same or similar economic interests. This trend will be extended to political and cultural spheres but economic interests will figure prominently. Regional cooperation will gain momentum in the form of bi-or multi-lateral character. As the pacific rim will receive a growing recognition, Korea will seek to play vital role in the promotion of regional cooperation.

In the absence of a central force which stabilizes the world order, the competitive scrambling for economic gains may invite a chaotic situation which results in a slow pace of economic growth worldwide. The economic growth of advanced countries will be impeded by the increasing proportion of elderly people and the possible deprivation of working spirit due to a larger number of people dependent on social security system. The effort of developing countries for economic growth will be handicapped by rapid growth of population and the protective policy of advanced countries.

In view of the environmental factors, Korea is expected to undergo noticeable changes in many areas. By the year 2000, population growth will drop to 1.0 percent per annum, but this growth will produce a net increase of 600,000 in a year. Projecting this growth rate into the future, total population of Korea will reach 50 million, still posing a heavy burden on economic growth. A significant drop in birth and death rates will alter the structure of population toward a "jar - shaped model" by bulging the proportion of people aged from 15 to 64 and those above it. The greater bulk of economically active population signals a promising future in Korea. The expected shrinkage of children means a breathing spell to improve the deteriorated educational conditions and the quality of education. The continuing stream of population toward cities on the other hand will increase the complexity of problems resulting from the biased distribution of population and regional disparity in education quality.

Social stability is the prerequisite for the realization of democracy. In the process of social transformation, rising income and education level will contribute to the bulging proportion of middle class populations who have internalized the value of self -governing and are conscious of political participation. So long as Korea remains divided, there will be the advocates of bureaucratic efficiency as opposed to those supporting the value of democracy. In the long run, however, democracy will prevail over bureaucratic efficiency. This will facilitate the development of regional community based on local autonomy.

In the year 2000, over-population, limited land space and the shortage of natural resources will continue to be a drag on national development. To sustain economic development, Korea will have no alternative but to resort to exporting manufactured goods. Sandwiched between the developed and underdeveloped countries, Korea will seek to improve competition in the international market by being on the frontiers of new technology. Among industries, heavy and chemical industry will continue to take a dominant place, and highly technology-intensive industry, which is the monopoly of advanced countries, will become a new target area to be developed in Korea. There will be an attendant change in development process from the government initiation, which invited its control and intervention, to autonomy which encourages the leadership of private sector. Development policy will pay due attention for the improvement of people's welfare and security.

In its arduous march toward the society envisioned of the year 2000, Korea will be in the process of rapid transformation in social and industrial structure, which invite a transitionally chaotic situation. On the rapid change feeds standardization, concentration, and the aggrandizement of organizations. There is a substantial risk that an individual will be reduced to a mere cog of wheel in a gigantic machinery. Human species will be increasingly gripped by the sense of alienation and dehumanization. This trend will be countered by efforts to promote humanitarianism, autonomy and egalitarianism.

The world has entered the second industrial revolution, and Korea faces new challenges of being on the frontiers of new technology. The new technologies to guide the industrial revolution in Korea are electronics, machinery and bio-technology. While furthering the development of heavy/chemical industries, Korea has the mandate of challenging the advanced countries in technology-intensive industry. Industrialization and rising standards of living will heighten concern for the preservation of environment and the promotion of people's welfare. To achieve self-sufficiency in technology, higher education institutes will strengthen the capacity of research and development, striking a balance between basic and applied sciences.

2. HIGHER CONSCIOUSNESS OF EDUCATION GOAL

Korean education in the year 2000 will be provided in clear view of the goal of "self-realization." This means that education provides opportunities for individuals to stretch their potential of development to the fullest measure. Given the fact that educational system mirrors society, it is taken for granted that education retains some degree of competition. But it is something transient in the process and excelling others in examination itself can not constitute an ultimate goal. In all educational situations, however, learning should be motivated by the drive to achieve self-consummation. The person motivated toward self-realization has the following characters.

a. Person with subjective identity : Living in the age of misgiving and uncertainty, man should be capable of self-control and willing to determine his own destiny with the sense of loyalty to the national community.

b. Person with intellectual ability : Man should have a better understanding of the surrounding world and be capable of solving problems intelligently and rationally. Such a person is able to discern rational reasoning from emotional biases and means from ends. Scientific thinking is highly prized.

c. Person with moral principles: A person with moral principle is capable of right judgement in consonance with his own conscience and such virtues in life as honesty, diligency and self-control. He is more conscious of cooperation and service in relation to others.

d. Person with democratic quality: A person with democratic quality cherishes the dignity of human beings and is highly conscious of duty attendant to right, law-observant, cooperative and tolerant of mistakes.

e. Person of creativity: A person of creativity is motivated to venture into the unknown, seek variety at the cost of stereotype and is open to change through contacts with other people and the outside world.

f. Cosmopolitanized Person: In the world increasingly marked by inter-dependence among countries, man should widen the vision of the world and be accommodative of foreign cultures on a selective basis with high consciousness of the meritorious elements of the nation's cultural heritage.

g. Healthy Person: To possess mental and physical health and to be physically fit and strong are basic conditions for normal human activities. A healthy person is able to enrich his life by effecting a balanced development of intellectual growth, moral maturity and aesthetic value.

h. Person motivated to learn : The startling growth of knowledge makes learning a life-long activity beyond the purview of schooling. Man should be motivated to continue learning which cut across time and spatial limitations.

3. GREATER EMPHASIS ON EDUCATION FOR WHOLE PERSON

While the goal of education is set forth in a broad connotation, as "self-realization" denotes, educational activity focuses on individual learners. Learners are respected as a human being and their growth into a true human being is what education is all about. Up to the present time, there have been many instances where educational programs are determined for the sake of administrative or managerial convenience. Consequently, learners were not treated with the degree of care that they deserve in the educational process. From the year 2000, educational facilities/equipment, curriculum and administration will be evaluated in terms of their contribution to growth into a whole person.

Educational programs include a balanced treatment of qualities needed for growth into a whole person. Man is born with potential that sees no bounds and a strong drive for growth into a person physically healthy, intellectually competent, emotionally stable, and morally mature. Each quality is inextricably intertwined with others; they reciprocate influence to one another. Therefore, an educational program should be an integrated whole of all qualities, as man himself is an organic body encompassing necessary ingredients. The belief in human potential and its internal motive for growth is implicative of the point to which educational efforts be directed, that is, to effect an integrated growth of human being. Given this mandate, we found that our earlier education had been so much concerned with the imparting of fragmentary knowledge to the virtual exclusion of critical thinking, creativity and emotional stability. Intelligent development should be tempered by emotional stability and social maturity.

The growth into a whole person is a process through which one discovers oneself in relation to others and the surrounding and a new meaning of life. A better understanding of oneself and the surrounding world enables one to set up a realistic goal for the future life and chart the way to it within his reach. Conscious approach to the established goal develops an ability to cope with problems effectively. The school and the community require professionals to help learners to do these. Guidance is effected by the combined efforts of school and community. The relation between teachers and learners and among learners should be based on mutual trust and friendliness.

Evaluation method will also be changed. Evaluation is not for judging learners but for helping them to grow. Grading one relative to others in a group entails the risk of discouraging even learners who made high achievement. From the viewpoint of a balanced growth, this method is not desirable. Evaluation should be concerned with the largest possible proportion of learners to reach mastery level. In recognition of wide variation of learners' abilities evaluation criteria should be diversified enough to cover individual differences as well as various areas of concern. Evaluation should encourage each of learners to compete with the negative force within oneself and develop positive factors for growth. In other words, evaluation invites competition not with others but with himself and this is the very way to develop excellence in the particular area of one's strength.

4. CHANGED CONTENT AND METHOD

As the result of arduous efforts to ensure the qualitative improvement of educational content and method, educational contents will become more relevant and teaching method will become more effective. Each learner will have a free choice of programs as they are relevant to him. No one will be forced to learn the contents that they are not up to or without knowing why they should learn.

There will be common contents applying to every one, which form the basis for continual learning beyond schooling, composed of basic value, knowledge and skill. There will be an unceasing stream of research and development with regard to the relevancy of contents and method. Contents will be organized around basic concepts and principles rather than fragmentary knowledge. Pupils will not have to spend time memorizing large amount of knowledge; instead, they all will find more time to inquire and apply what has been learned to daily life. Experiential learning will dominate mere acquisition of knowledge and this will expose learners to creative experiences and aesthetic pursuits, where value judgement is needed.

The improvement of learning outcome necessitates the utilization of technological aids and multiple instructional materials. Effort will be made to ensure that the largest proportion of learners reach mastery level, catering instruction to individual needs. Much of instruction will be dependent on well-prepared T.V. and computer programs. Studies will gain momentum with regard to the relevancy of curricula and for the development of instructional materials.

5. ESTABLISHMENT OF LIFE-LONG EDUCATION SYSTEM

In the 2000's, the school will no longer be considered as the sole place of learning; home, social organizations and society all will play important educational roles. Education takes place everywhere and continues from cradle to death. The education which sees no time and spatial limitations is called life-long education. Article 29 of the Constitution defines the concept of life-long education and provides for support for necessary steps to establish an effective system of life-long education. The necessity of life-long education is not merely heightened by the explosive increase of knowledge but by the concern of welfare state to ensure that each member of society is guaranteed of opportunity to stretch one's potential to the fullest measure. The life-long education envisioned for the 2000's will feature the sharing of educational role between home, school and society. The role of home, starting with ensuring that the embryo grows smoothly, is vitally important in facilitating the growth of child; physically, intellectually, emotionally, socially and morally. Parents substitute teachers at home and other members of the family assume important dimensions of education, as they are brought into a relation which encourages the exchange of experiences. Much of habits related to reading, hobby and other cultural experiences are shaped by what they experience at home in early childhood. The ability to discern good from evil and to control oneself should be developed at early childhood. It should be brought home that the basis to determine the future life of a child is laid before he begins schooling. The educational role of home does not cease after a child begins schooling. Educational efforts are such a complicate matter that can not be relegated to school alone.

With the expected sharing of educational role, school remains to be the most important institution of education. Nonetheless, its role will be a significant departure from what it is now. Among myriads of things to be learned, the learning of rules, concepts and principles will figure prominently in laying solid basis for further growth; the motivation toward inquiry into the unknown is particularly important. In moral education, exposure to situation which calls for value comparison or value judgement is more important than infusing them with values. The school may be an adequate place which provides vocational and skill training, but it may well find its role in instilling working ethics, with specific skill trainings to be relegated to plants in the form of on-the-job training. The role of school will be evaluated in terms of its contribution to adaptation to specific situations and, in this sense, school viewed in the perspective of life-long education equips pupils with an ability to continue learning. Education continues in one way or another to improve work performance or to enrich life through the acquisition of new knowledge and skills. In this case, education will become an autonomous activity motivated for self-improvement. The life-long education envisioned for the future comprises the expanded services of library and museum, systematic training programs by industrial firms or other social organizations and active involvement of schools in adult programs, with distinction between teachers and learners blurred. Home, school and society will be brought into a mutually complementary relation. In order for them to effectively perform educational role, their capability of education should be improved; parents and managers should meet the minimum requirement of knowledge concerning pedagogical principles.

6. MORE FLEXIBLE EDUCATIONAL SYSTEM

As life-long education is taking shape in a specific form, educational system will be more flexible. The present school ladder will remain without significant change but it will allow for the provision of special programs for the gifted children. The special program will not be age-specific; introducing earlier entrance, accelerated advancement and earlier graduation will make a deep dent in the rigidity of present system. By allowing for re-entrance, pupils may stay in or out of school as situational factors dictate, notably for economic reason. Sandwich program will receive growing recognition as a new scheme to keep pupils free from institutional limitations and unnecessary formalities.

To allow pupils to have a free choice of courses as they are relevant to their aptitudes and interests, school should administer placement tests frequently as need arises. Placement test will sort out the gifted children who may be excused from some courses on the upper secondary and tertiary levels. This system will be supportive of the institutionalization of accelerated advance and earlier graduation.

Flexibility also applies to the grouping of learners and the staffing of teachers. Learners may be grouped into large, middle and small-sized teams apart from the regular class size, as learning objectives and the nature of instruction call for. Non-graded system will be another to lead off the flexibility of school operation. A small learning group may cut across schools in a regional community, if it serves the covenience of instruction for a special objective. In this case, the community or the society itself becomes the site of learning. This method proves to be suitable for the acquisition of specific production skills. Parents, experienced technicians or other concerned professionals may become teachers.

Educational administration and management will become more flexible; introducing management by objectives will make a deep dent in the rigid budgeting system. Flexibility applies to the personnel management, namely, appointment, promotion, transfer and incentive rewards of teachers and administrators. It should allow for the variation of rules and operational mode depending on the unique needs of school or community. The transfer of teachers on a regular rotation basis will stifle the variety of educational needs. It is crucially important to reflect the volition of teachers in relation to a specific school or community, considering that an emotional attachment given to it has much to do with morale and the sense of commitment. It is in this way that a humane relation is shaped between a teacher and learners.

Flexibility will be built into educational facilities. The criteria for construction of educational facilities may vary in consideration of the convenience of administration and educational needs. Standardizing classroom amounts to defying these needs; the shape and size of classroom should vary enough to accommodate a wide variety of educational activities. The increased flexibility of educational administration is the first step toward the autonomy of school and the professionalization of teachers and administration.

7. PRE-SCHOOL EDUCATION OF HIGHER QUALITY

Among other institutions, home is primarily responsible for preschool eudcation. The role of home is many - fold in relation to education; it gives the sense of being loved and trusted, causes creativity over the surrounding world, and sensitizes to the basic inter-personal relation. In other words, home is responsible for the initial stage of socialization. In the 2000's, parents will be ready to bear the educational responsibility of home with a better understanding of knowledge and principles. Motherly care and love will characterize home education. Mother's role in education may be played by grandmother or a teacher of child center. What is apparent is that a child receives vigilant care. Children aged from 3 to 4 will be housed in child center which is viewed as the extension of home while their mothers are away to work. To keep the workload of child center within a manageable bound, a teacher should be responsible for no more than 12 children. The child center does not have to be a formal institution. It may be such that uses mother volunteers and regional community should be responsible for education to upgrade their professionality. As opportunities are enlarged for mothers to be employed, child center will increase in number. But the efforts will be made to harmonize the quantitative expansion with qualitative improvement of program. Parents who entrusted children to child centers will be more conscious of their responsibility and willing to share educational role with child centers. Both central and local governments will provide subsidy to ensure the expansion of child centers in outlying areas where parents can not afford to pay necessary attention to children.

Children above the age of 5 will be exposed to a more systematic educational program at kindergartens. The program of kindergarten finds it role in laying the foundation for schooling, Children learn in a group; they develop intellectual curiosity, imagination of the world beyond sight, the thrill of learning and the sense of law observance. The conditions of kindergarten will be improved to ensure higher quality of education. The teacher-children ratio will not exceed 15.

The quantitative expansion of kindergartens will be tempered by the effort to improve the quality of program. Like child center, kindergarten does not have to be of formal structure; it may become an informal entity served by volunteers. 70 Percent of children in the age bracket will be enrolled in kindergartens and nonformal organizations by the year 2000.

8. ELEMENTARY EDUCATION OF HIGHER QUALITY

In elementary education each of learners will be treated with personal care and primary school will be a pleasant place to go to. Children will be the central focus of school and community. Taking care of child with love and respect builds a climate which facilitates growth into a person with subjective identity, moral consciousness, democratic quality, creativity and health.

In order for instruction to be individualized, class size will not exceed 40 pupils. Even in the class of 40, program will be tailored to individual needs with a wide variety of learning activities coupled by flexible grouping of learners. There will be more opportunities for self-learning. Curriculum will reflect the changing trends of society so that pupils are prepared for the future society. The use of multiple instructional materials will enable pupils to proceed at their own pace and in their style. By the 2000's, computer will reach classroom and this will facilitate the individualization of instruction. The integrated curriculum applying to grades 1 and 2 will be extended to higher grades. The number of subject matters will be reduced with efforts being made to trim down redundant contents which are time-consuming to learn. By adhering to essential ingredients, it will be possible to stimulate interest in and renew zeal for learning.

The conventional method of evaluation dependent on a limited number of criteria will disappear from educational scene, as it is assuming the role in providing empirical data and feeding back information to improve instruction. The competition stimulated by relative grading will no longer find its place; competition, if necessary, will be encouraged to stimulate progress in the mastery of objectives. The evaluation sheet, which recorded the grades based on test scores, will be changed to describe strength and weakness of an individual learner.

The teachers responsible for the changed profile of education should improve their competency and take pride in the professionality of works. Those with such a professional competency deserve of the same treatment as secondary school teachers. In order for them to derive satisfaction from teaching, working conditions will be improved with the provision of multiple instructional materials. They will be aided by parents and volunteers.

9. EXTENSION OF COMPULSORY EDUCATION TO NINE YEARS

The present enrollment ratio of middle school which exceeds 95 percent at the present time will come close to 100 percent in the mid 1980's. Whether middle school is provided free or at cost, it will reach the enrollment level of compulsory education. The government will institutionalize free education on this level on an incremental basis, starting with remote and outlying areas. The enrollment ratio of high school, which exceeds 75 percent now, will exceed 86 percent by the year 2001. The increasing trend of enrollment will lay the foundation for the forthcoming extension of free, compulsory education to high school.

With the universalization of secondary education, its contents and methods will be given new characteristics, which distinguishes it from the present ones. The middle school will do away with its earlier characteristics as a terminal program and instead take on new characteristics to serve as a process leading to upper secondary education. Therefore, its program will increasingly be oriented toward general education to lay the foundation for growth into whole person. It will be characterized by a wide variety of programs to help individual pupils have a better understanding of themselves and establish new self identity. A mechanism will be built into program which provides for earlier identification of aptitude. Pupils will be exposed to vocational subjects where they chart career path relevant to their aptitudes. The effect of instruction will be heightened by the utilization of multiple instruction materials and competent teachers. All learners will reach the mastery of learning objectives and some will be allowed to accelerate graduation depending on their demonstrated ability to study. Instruction will reflect a balanced treatment of goals in the three domains, cognitive, affective and psychomotor. Some pupils will be relieved of the burden of preparing for advance to high school. A variety of evaluation criteria will be developed to sieve those unfit to continue schooling and to arrange for them vocational programs. Being in the formative stage, they will be immersed in a climate which respects the individuality of pupils.

As the enrollment ratio of high school is expected to exceed 90 percent, the range of individual differences will widen. Contrary to this trend, there will be a limited number of special schools to accommodate the gifted, retarded and physically handicapped children. Due to limited places in higher education, 63 percent of applicants will continue schooling after graduation from high schools, with the remaining spilled over to join the working force. This gives urgency to the necessity of diversifying educational program and strengthening career guidance. It requires that vocational programs be offered by high school apart from that for those bound to colleges. Considering that much of vocational skills correspond to the level of high school, career guidance and vocational programs of higher quality are much in order. Since the pupils coming from vocational stream constitute a corps of skilled workers needed by the society, incentive scheme will be institutionalized for them, including tuition exemption, scholarship, credit loan and job placement. General and vocational high schools in a district will be merged into an integrated high school which offers a wide range of vocational choices to those unfit to continue schooling after completing the first year's common course. Those who drop from the college-bound course will be allowed to revert to vocational program. Although the vocational program of integrated high school is intended for job-bound students, it is not meant to strip them of the opportunity for higher education.

10. UNIVERSALIZATION AND EXCELLENCE IN HIGHER EDUCATION

Given 69 percent of high school graduates advancing to higher education, 47 percent of total population in this age bracker are enrolled. Even those bound to job market will be exposed to an unceasing stream of in-plant or on-the-job trainings. In this way, education will continue across ages in one kind or another. Higher education is no longer the monopoly of a few elites; it has reached masses of people.

The universalization of higher education gives rise to the problem of ensuring excellence. Even with the significant improvement of physical conditions, curriculum and teaching method, it is still an uphill fighting to ensure the excellence which was attainable when higher education was limited to a few elites. The higher education envisioned for the 2000's will inevitably feature duality; the effort to ensure scholastic excellence through quality control will parellel programs applicable to daily life. The former gives central focus to basic research and the development of scholarship, while the latter is meant to meet the needs of daily life. The former places greater emphasis on graduate education, as contrasted with the latter giving heavier weight to undergraduate and continuing education. The duality can be preserved through the functional division of higher education institutes; some are developed into a few institutes of the world standard in a sea of mediocre institutes. This does not mean that the remaining may be devoid of excellence; they should rather be characterized by the programs which have relevance to the solution of problems spawned in the dust of daily life. It simply means that higher education institutes may be classified according to functional division; they do not reflect the difference of achievement level. To ensure the excellence of higher education, the financial burden of government will increase and tuition will be adjusted upward to a realistic level. Financial aids will be provided to needy students who have scholastic potential. They should not be denied access to higher education of excellence simply for economic reason.

The excellence of higher education is maintained in research, teaching and social service. To vitalize the research function of universities, research faculty will increase in number, with the increase of financial support for their research. Greater emphasis on research means an effort to strengthen graduate education. Graduate students will serve as research assistants and dissertation will be the direct outgrowth from their participation in research projects.

The social service of university will not be onesided; the university will be in a mutually complementary relation with the society. The society will support the university and this will in turn serve the society with knowledge and technology it develops. New teaching methods will be adopted, which have relevance to the development of moral consciousness, inquiry skill, creativity and critical thinking. Efforts for quality control will be intensified.

11. SPECIAL EDUCATION IN NORMAL OPERATION

Since education sets its goal on self-realization, it is never conceivable that handicapped children are denied access to quality education. Neither is it tolerable to allow gifted children to be frustrated by routine programs standardized for the average students. Viewing from the national level, the absence of programs relevant to them causes the dead loss of human resources which might otherwise have become a dynamic force for national development. Amid the heightening concern for normal education, special education has been overlooked. In the 2000's those in special categories will receive quality education which meet their own needs.

With the development of preventive medicine, physically handicapped children will decline in number. By contrast, however, the number of emotionally or mentally retarded children will increase. For these children, more special schools will be established and normal schools will be equipped with special classes, treatment room, and a center for special education materials. To accommodate 57 percent of handicapped children, 15,000 special classes be established by 2000. To provide adequate treatment, schools will maintain a cooperative relation with medical centers. There is no need to separate all handicapped children from normal classes. Efforts will be made to retain them in normal classes with special facilities and materials available to meet their needs. There won't be distinction in curriculum, except for the variation of specific content and teaching methods as they are considered relevant to the handicapped children. In order to equip them with skills to earn living, vocational program will be strengthened.

Research and development will gain momentum with regard to instructional materials and aids for special education. Teacher training programs will be arranged for teachers in special education. Teachers for regular classes and administrators will receive a modest amount of training to develop their better understanding of special education.

Education for the gifted children will be developed to be in normal operation by 2000. The importance of education for the gifted children is heightened by the necessity of sharpening the competitive edge of the nation in relation to other nations, let alone the humanitarian concern. Therefore, it has been adopted as one of basic policy goals. The effort to discover gifted children will be intensified at all school levels and the children selected on the basis of valid criteria will be placed into special programs which challenge their potential. The special programs will lead them to an accelerated graduation. The gifted children will be allowed to attend courses in university while enrolled in high school, as they demonstrate the ability to do so. The implementation of such programs may cause negative effect on normal students and, with regard to these, research and development will be encouraged.

12. VOCATIONAL EDUCATION FOR GREATER EMPLOYABILITY

Industrial development precipitates diversification of occupation and this increases the difficulty of making a right choice of future career on the part of children. The school is responsible for keeping children fully appraised of their aptitudes and occupational change in order that they make an informed decision on occupation. In this sense, career guidance needs to be strengthened as part of school education. Occupation is not a mere means to earn one's living but assumes important dimension as a means for self-realization and for social development.

Career guidance will be given a different character by school level. Kindergarten and primary school will develop the recognition of the role and importance of vocational education, middle school, will provide information on the kinds of occupation and encourage students to consider them in relation to their aptitudes; and high school will help students make an informed decision on occupation and prepare for the selected occupation. Through the collaborative attempt of school, the government and industrial firms, a supportive system will be established to provide information and counseling services and develop programs and materials which offer a thorough orientation about occupation.

Balance has been maintained between the supply and demand of technical manpower in quantitative terms. But the development of technology-intensive industries will bring the problem of quality into a new focus. The demand of manpower will increase in skills which require professional expertise; the multi-skilled workers in particular will see sharp increase in demand. In order to meet this demand, school education will be clearly defined in relation to occupational trainings so that the two are functionally linked on a mutually reinforcing basis. To enhance the relevance of vocational programs in high school, contents will be organized on a broader basis to include the view of occupation, working ethics, human relation, quality control and others besides the skill-related subject matters.

To enhance the professionality of vocational education teachers, legal provision will be made to require that teacher applicants have industrial experience to be licensed as a teacher. Efforts will be made to improve the quality of teacher training program with incentive scheme developed to induce qualified technicians to school. Skill training facilities will be expanded and the utilization of them will be maximized by making them available to school education. Expensive industrial facilities will be open to be shared with schools.

Employed workers will have easy access to education or training which continue throughout their life. By continuing education or training, they will prevent themselves from being estranged from the advancing stream of technology. Air/correspondence and open colleges will increase in number lest that education is hampered by time, spatial and economic limitations.

With the growing complication of industrial structure, the need will increase for middle-level skilled workers who are qualified by graduation from two-year technical colleges. They find role in bridging between engineers and workers who completed high schools. The program of technical colleges will be diversified; apart from regular courses, they will give a unique character to their role by offering short-term programs highly tailored to specific needs of target groups. School-industry cooperation will develop to a fulfledged entity which maximizes the utilization of resources on a reciprocal basis.

13. CHANGED PROFILE OF TEACHERS

The profile of teachers envisioned for the 2000's will be a significant departure from what it is now. In the first place, the concept of teacher will have a broad connotation which refers to the people affecting the learning and growth of youngsters, viz., parents, peer group, superiors and relatives apart from teachers. As the society in its entirety is becoming the field of learning, all members of society are expected to play an educational role in one way or another. The role of teacher will rather resemble that of curriculum. People living in a society are related to one another and they exert a positive or negative influence on the growth of others through this relation. Thus, each individual needs to be aware of the educational value that he or she holds. Although one's growth is not influenced by others, the complicate web of people expects each to become a teacher for himself. In this way, education continues throughout one's life time. By the year 2000 all people will have received education to be qualified as a teacher. Parents will do their share of educational role as an educator at home and as a teacher at school.

Teachers will be required to have a high degree of professional competency. In the highly industrialized society, the role of school will be more important in restoring humanity. The quantitative expansion of education will intensify effort to maintain qualitative excellence. Teachers will enjoy higher degree of autonomy than before and recognized for the heightened accountability and professionality.

Cry for the higher professionality of teachers will lead us to place high expectation of teacher training system. The present teacher training system leaves little to be improved in terms of its relevance to the qualities expected of teachers in the contemporary society. Viewed from the point of new criteria set for the future, it is far from meeting the expected quality of teacher. The relevancy of teacher training program should be evaluated against a new set of criteria and steps should be taken to improve it.

Teacher training program comprises general and special subjects. Student teachers will deepen their understanding of human beings, the society and the nature and have a far-sighted vision of the future. They will be well versed with the subject matters they teach and approach teaching with the full understanding of theories related to learning, growth and behaviors. The teacher training program will provide opportunities for student teachers to have a sufficient amount of first-hand experience of teaching at classroom. If necessary, it may be stipulated that student teachers completing four-year course serve in an apprenticeship for one year and be qualified as a teacher following evaluation based on the demonstrated ability to teach. Teacher's colleges and colleges of education are not the sole avenue to become a teacher. One or two year program may be built into teacher's colleges and colleges of education for graduates from other colleges. This system resembles MAT (Masters of arts in teaching) which is implemented in other countries. It is required that prospective teachers complete the full course of teachars' college or college of education or MAT course in the case of graduates from other colleges to become a teacher.

Teachers will be ensured of access to continuing education which comprises programs of different durations. The completion of these programs leads them to master's and doctoral degrees. In view of the necessity of providing advanced program for gifted children in high school, the demand is increasing for teachers with the same degree of professionality as that of college professors. With the substantial change of teacher training program, teacher evaluation system should be based on a new set of criteria to provide valid data for promotion. As much important as the professionality in teaching and subject matters are the character and moral consciousness of teacher.

14. INCREASE IN ADMINISTRATIVE AND FINANCIAL SUPPORT

Local autonomy will be realized in educational administration; the professionality of administrators will be ensured; and educational policy will feature political neutrality. Much of responsibilities of central government will be delegated to local government and this will hold the Ministry of Education responsible for the formulation of major policies, planning for the supply of teachers, long-range educational planning, budgeting and coordination. Its planning function will be strengthened and this will make it possible to implement educational policies in a consistent, long-term perspective. Its planning and policy functions will be supported by consultative bodies and other schemes designed to reflect the public opinions.

In parellel with the delegation of authority to local government, administrative formalities will be simplified. As schools are given higher degree of autonomy, the role of administrative authorities will shift from control and interference to encouragement and support. Higher degree of autonomy in school will entail a greater latitude of principal's discretion. It should be noticed, however, that ensuring accountability is the responsibility of each school. To help schools grow in professionality and creativity in autonomous situation, information management system will be established.

The higher degree of autonomy given to school holds classroom teachers directly responsible for the accountability of school to the society and tax payers. Among others, teachers are key factor to determine the quaity of education. But the quality of education can not be ensured if teachers are not supported by administrators with professional competency. It is essential that administrators have a thorough understanding of pedagogic principles, higher sense of commitment to education goals and humane character as required of teachers. But there are other qualities for administrators to possess, if they are to grow in professional competency. Administrator training will parallel teacher training, each maintaining its unique characteristics and a mutually complementary relation with the others.

The double imperatives of ensuring quantitative expansion and qualitative excellence necessitates a substantial increase in educational expenditure. In view of numerous factors to trigger budgetary increase, it is urgent to explore the possibility of developing new sources of educational financing. Included for consideration are to increase proportion of education budget to total government budget, to extend education tax beyond the legally specified period, to invite contribution from private donors and to determine the proportion of sharing educational expenditure between the government, community and beneficiaries. Since the financial burden of the government and beneficiaries has reached limitation, reliance on contribution and donation will increase. The proportion of contribution and donation is much larger in other countries. In some private universities of high reputation, it takes 30 percent of total expenditure. Industrial firms, charitable organization, celebrities with high concern for education and parents are the potential sources of contribution and donation. Due to the public sensivity to possible misuse of the fund, they received relatively little attention despite their potential contribution to educational financing. Coming into the 2000's, encouragement will be given to contributors in the form of tax exemption and other incentives.

The fund transfered from municipal and provincial boards of education will increase. Since educational administration was separated from the general administration, local governments paid little attention to education considering it, as the exclusive concern of educational authorities. With the realization of local autonomy, local government will be directly responsible for the financing of education. The increased financing of education and the establishment of democratic administration system will give a new vitality to educational efforts directed toward the goal of self-realization.